Antiquity

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Editorial Notes

THE excavation season in Great Britain and Ireland is in full swing as we write, but will be practically over by the time this number appears. Woodhenge and the adjacent small circles are being explored by Captain and Mrs Cunnington with highly satisfactory results ; the Trundle (near Goodwood, Sussex) by Dr Cecil Curwen ; the lake-village at Meare by the Somerset Archaeological Society ; St. Catherine's Hill (Winchester) by the Hampshire Field Club ; the village at Chysauster (near Penzance, Cornwall) by Mr T. F. Kendrick, of the British Museum ; and Belas Knap (Glos.), by H. M. Office of Works. The excavation of four Romano-British towns—Colchester, Caerleon, Richborough, and Alchester (Oxon.)—is in progress (see p. 353). We mention only a few of those undertakings which are personally known to us ; there are doubtless many others on foot. Of those mentioned the majority are due to the enterprise of private individuals, associated in some of the cases with archaeological societies.

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At Woodhenge there are, in addition to Woodhenge itself, about a dozen small burial-circles, ranged for the most part in a line to the south-south-east. One is double and shows also signs of holes ; and there is a small circle of holes without any ditch. All these smaller circles were, like the essential features of Woodhenge, revealed by air-photography—they are practically invisible on the ground ; and prints from negatives made this year by the R.A.F. are being used to guide the work.

Air-photography is also indirectly responsible for the excavations at the Trundle, for it was an air-photograph which drew attention to a hitherto unnoticed inner circle, representing probably an older ‘ camp ’ on the same site. Here too the photographic print is being used as a map, though the remains in question are plainly visible on the ground.

Furthermore, the spell of dry weather we have just enjoyed has produced a fine crop of new discoveries in several widely separated regions, some of them being of first-rate importance. These have all been made by Officers of the Royal Air Force in the course of their duty. The photographs taken will be published in due time, some of them in ANTIQUITY. For the present, therefore, we shall say no more, except that the results surpass the most sanguine expectations.

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À propos of surface aids to excavation, we have been asked by a correspondent to explain ‘ General Pitt Rivers’ method of discovering pits and ditches by means of hammering the surface with a pick, referred to in “ Man and his Past ” (p. 214) ’. The method is quite simple. When the ground is struck, the sound given back is much deeper and more ‘ booming ’ over a silted-up and often invisible ditch than elsewhere, where it has been undisturbed. By walking and hitting the ground with the butt end of a pick, it is quite easy to locate such hidden ditches and pits, and even to ascertain their exact width. It was thus that General Pitt Rivers found the Angle Ditch on Oakley Down in Cranborne Chase. By using this method on Worthy Down, near Winchester, the writer and the late Mr Hooley recovered and pegged out the plan of a Celtic village ; the plan was transferred to paper and a sealed copy deposited, before excavation began, with the Society of Antiquaries. When compared later with the results of excavation, there was little to alter. The method of ‘ ramming ’ or ‘ sounding ’ was used at Stonehenge by Colonel Hawley and is being extensively employed at Windmill Hill by Mr and Mrs Keiller and their staff. At the latter place a specially made wooden ram is used, resembling the one used by navvies. The method is probably not applicable to certain soils ; it works best on the bare chalk, where there is only about six inches of humus.

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Another correspondent suggests that ‘ an opportunity for discussion and correspondence in ANTIQUITY would serve a distinctly constructive purpose'. We agree; and we can generally find room for the ventilation of new ideas and for fresh interpretations of observed facts. But the border-line between friendly argument and polemics is easily overstepped. When once an argument has begun it is apt to become lengthy and involved, and sometimes heated. The details of controversy are generally dull and technical and more suited to the meetings of a learned society. Even a friendly argument might pall if conducted in a Review appearing at intervals of three months, especially if the parties to it lived on different continents, thus perhaps involving even longer intervals of time between each letter. Space also is limited.

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For some of these reasons we have deliberately ignored the Sligo controversy, to the regret of another correspondent who charges us also with neglecting Ireland. (The Sligo controversy turns on certain limestone boulders which are claimed as humanly-made objects, and as evidence for the occupation of Ireland by Man during the Palaeolithic period). We think the charge is exaggerated.[1]

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The quarrels of the learned are notorious; but flints seem to have some unusually provocative quality in this respect. Can it be that they still retain an 'aura' of forgotten fights in far off eolithic days?—or is there some simpler explanation? The main bone of contention is whether certain English flints were chipped by Man or by Nature. It is a case of great importance, for upon the verdict depends nothing less than the antiquity of man. The facts to be proved are (1) that the flints have been humanly worked; (2) that, if so, they were found in an *undisturbed* geological deposit of the age claimed.

In recent controversies in East Anglia both claims have been put forward by some and denied by others. Either the 'implements' have failed to carry conviction, or subsequent disturbance of the deposit has been alleged. The earliest rude attempts of Man to make a tool would naturally resemble Nature's handiwork; but there are several facts which suggest rather a natural origin for rostro-carinates and eoliths—the immense numbers found, for instance, on a given site. Another criticism is based on the fact that not a single fragment of a human bone has ever been found, in spite of the abundance of the

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[1] See for instance Vol 1, pp. 97, 98 and plate, pp. 124–6, 253 and 510, but, with the whole world to cover, we must ask for patience. We have not forgotten Ireland, and have received the promise of a certain article when the time for its publication shall have come.

‘ implements ’ and the diligence of their discoverers. (The Foxhall jaw-bone, now lost, has no evidential value).

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The point at issue between Mr Hazzledine Warren and Mr Sainty (see pp. 344–5) concerns an alleged disturbance of the boulder-clay in which an undoubtedly ‘ human ’ implement was found. It is a point which, as Mr Warren says, cannot now be settled ; for it arises from an observation which from the nature of the case cannot be repeated. We would remark, however, that boulder-clay is a formation whose subsequent disturbance or rearrangement is often very hard to detect ; and was it not from under alleged boulder-clay that there came the famous Ipswich skeleton ?—at first claimed by Mr Reid Moir to be of pre-Glacial age.* He subsequently realized that the supposed boulder-clay under which the skeleton was found was nothing more than hill-wash†, as claimed all along by his opponents. This hill-wash covers a prehistoric floor with flint implements and *pottery*, which Mr Reid Moir regards as Lower Aurignacian, but which others consider to be not earlier than Neolithic. If, in an observation of such fundamental importance as this, Mr Reid Moir—and, one may add, many other observers of great experience—could be misled by appearances, surely it is equally possible that Mr Sainty may have made a similar mistake ?

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The whole world has now realized the importance of the UR Excavations, which yielded such magnificent finds last season. Those who have seen them at the temporary exhibition in the British Museum will have noticed with what skill they were unearthed and preserved. The excavation of the royal cemetery will be continued this winter, and there are good reasons for expecting more valuable discoveries. The readers of ANTIQUITY made a substantial contribution to the funds last year, and we are now asking them to help again. A form is enclosed in the present number for this purpose.

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During October and November the Editor will be travelling in the Middle East, out of the reach of correspondence, and all communications concerned with ANTIQUITY should be addressed to the Assistant Editor, 24 Parkend Road, Gloucester.

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* *Proc. Prehistoric Soc. East Anglia*, vol. I (part 2) 1912, p. 194 ; and *Journ. Roy. Anthr. Inst.*, vol. XLII, 1912, p. 345.

† *Nature*, 12 October 1916.

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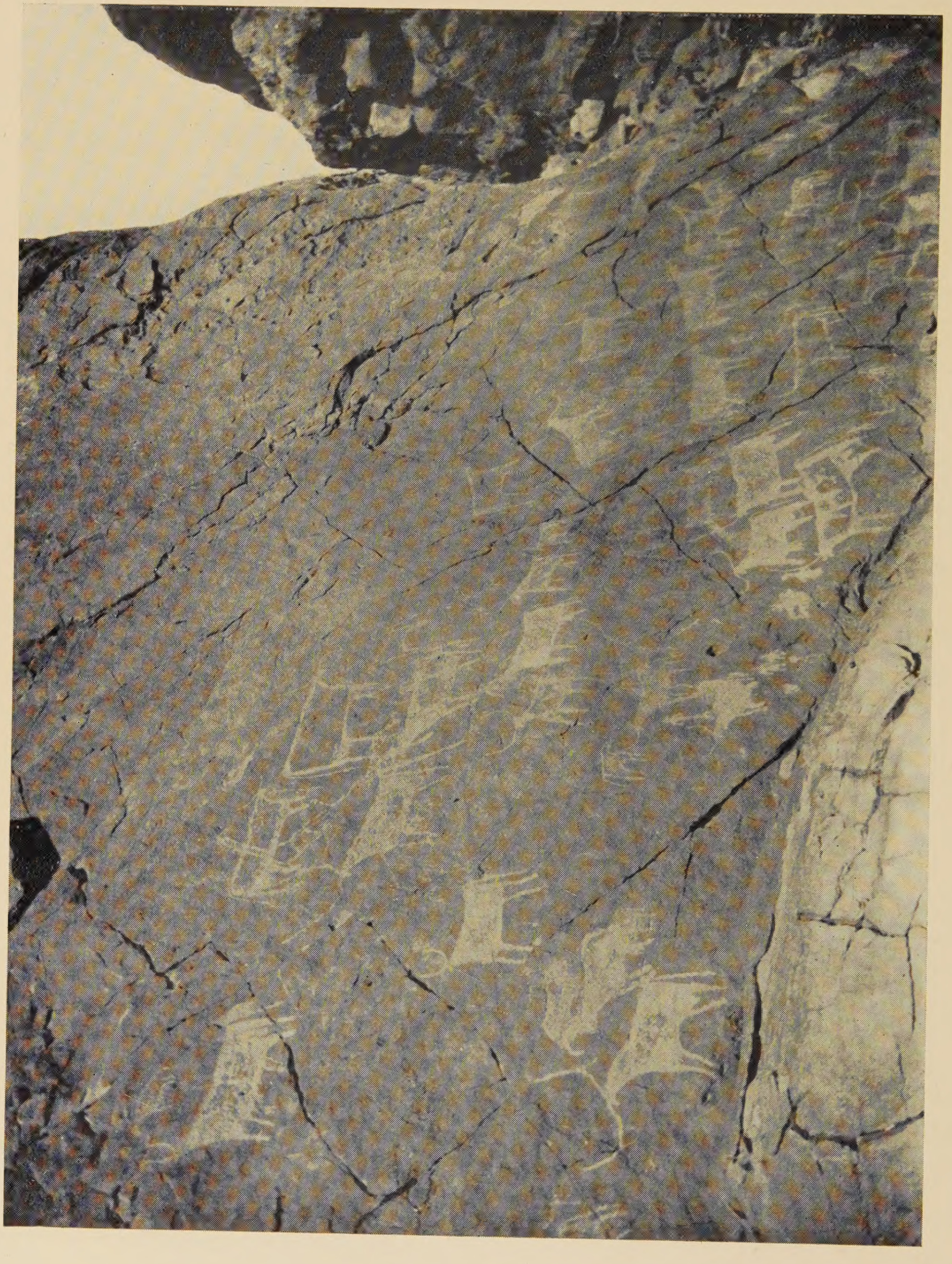
PLATE I



ROCK-PICTURES AT ZOLAT EL HAMMAD

Ph W. B. K. Shaw

facing p. 261

Rock-pictures and Archaeology in the Libyan Desert

by D. Newbold

OUT of Africa there is always something new, as Aristotle wrote in the fourth century B.C., and although the Libyan Desert is one of the most desolate areas of the world's surface, recent explorations have shown that there are many archaeological discoveries to be made which will throw considerable light on the early history of peoples and their migrations in North Africa.

In the eastern Sahara and in the Libyan Desert, there are still many unexplored tracts, and even, it is probable, several unvisited oases, particularly in the great white spaces on the map which stretch southwest and southeast of the Kufara oasis-group.

The borderlands of French Wadai, Italian Cyrenaica, and the Anglo-Egyptian Sudan, and the forbidding deserts which lie between Tibesti and the Fezzan, are still most imperfectly known : consequently it would perhaps be premature to attempt to draw any detailed picture of the early movements of Libyans and their negroid neighbours to the south. But it may be of use to future explorers and archaeologists in this area to recapitulate recent discoveries and to indicate what kind of archaeological remains they are likely to find and where to seek them.

The recent discoveries are mainly confined to rock-pictures and stone implements. Some pottery has also been found, but usually under circumstances, and of a type, which preclude any definite association with the rock-pictures.

Before describing the sites seriatim, I should like to offer, with the diffidence of an amateur, a few general comments on field archaeology in North Africa. Like all sciences, archaeology has shown of late years a tendency, peculiarly distressing to the novice, towards excessive specialization, especially in the typological sphere. Classification by types in the case of implements, and by technique in the case of rock-pictures, has been carried to such a pitch that other evidential data have been distrusted or ignored. Archaeology, after all, is a branch of the wider science of anthropology; and our ultimate aim in the study of rock-pictures and implements is to identify their artists and their wielders—to put them, as it were, on the prehistoric map, and to discover their origins and their relations with the outside world. If we succeed, we turn prehistory into history; but if we stop short of this, confining ourselves to mere description and classification, we are shirking the main issue and stultifying a noble science. It is quite true that by a careful study of types and the compilation of distribution-maps lines of culture-drift and actual migrations of races may often be verified. But prehistory in North Africa is not as prehistory in Europe. Its darkness comes right down to the Middle Ages. Untold centuries separate the painted bisons of Altamira from the incised antelopes and ostriches of the south Libyan Desert. Moreover Altamira must tell its own tale, whereas we can call in the aid of classical and Arabian geographers and even of native traditions in our attempts to piece together the ethnography of the eastern and southern Libyans.

The identification of old place-names and race-names is regarded by many archaeologists as too dangerous a pastime to be indulged in freely, and it is quite true that rash speculation in this direction on the part of otherwise eminent scholars[1] has led to some confusion in the past. The remedy, however, is not simply to avoid this branch of study, but to undertake it with eyes open and with some knowledge of the languages concerned. It does not need much more than a working knowledge of Greek, Latin and Arabic, together with a good map, to extract from the classical and medieval geographers a mass of very interesting data about oases still unexplored or only partially surveyed, and about the proto-history of the Libyan and Libyo-Ethiopian tribes who inhabited north-east Africa both off and on the Nile, for several millennia before the advent of the Arab in the seventh century A.D.

An example may be found in the identification, which I have nowhere seen made, of Jarabub oasis with Ptolemy's Lacci Palus. This identification is proved by a statement in the anonymous Arabic history of Siwa oasis that Jarabub was formerly known as Lakk. Similarly we know from native traditions that the pre-Arabic (Tibbu ?) name of Kufara was Tazerr. This is clearly reflected in the present name of the western oasis of the group, Taizerbo (=people of Tazerr, cf. Kanembu = people of Kanem), and also in Ptolemy's Aezari, whom he places hereabouts on the map (T– being the Berber prefix).

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[1] *e.g.*, C. Müller, in his commentary on Ptolemy, and Vivien St. Martin in *Le Nord de l'Afrique dans l'Antiquité* (1863).

Again the Sebridae, whom Ptolemy places in the Dongola deserts, were probably inhabitants of El Bekri's lost oasis of Sobrou, which may be identified with Nukheila or Zerzura.

There are a number of other coincidences and parallels awaiting the student of ancient geography and they all tend to confirm the accuracy not only of the Greek, Roman and Arabian geographers, including the much-maligned Herodotus, but also of the medieval and later maps, *e.g.* Hondius, d'Anville, etc.

It must be remembered that nearly all the rock-pictures and implements in the Libyan Desert are surface finds. The former are mostly incised on exposed boulders or hillsides, and the latter have been picked up from the bare desert. Consequently no question of stratification arises and almost the only excavation that can be done is the digging into ancient written and oral records.

The classical writers are very fond of comparing the Libyan Desert with a leopard-skin owing to the number of oases dotted over its surface. Dionysus Periegetes describing it as *κυανῆσι κατάστικτος φολίδεσσι*; Priscianus repeats the simile. The general impression we get is of a great desert with numerous stepping-stones of oases and wells, allowing free play to tribal migrations from north to south.

Herodotus, who names some twenty tribal groups in East Libya, relates an interesting story of an exploration by five noble youths of Nasamones from Cyrenaica to the upper Niger, and also tells how the Garamantes, who inhabited the Fezzan, hunted the ' Ethiopian Troglodytes ' in four-horse chariots. It is clear that by the fifth century B.C. there was a good deal of contact between the Libyan tribes of the Mediterranean coast with its hinterland and the negroid peoples of the far interior.

By Strabo's time, several centuries later, the Garamantes had extended their range further eastward and were clearly a large inland ethnic group. Strabo is the first writer to notice the several oases : Herodotus knew only Siwa and Kharga. Strabo also notices the ' Nubae who live in Libya ', probably negroid Libyans, ancestors of the present Nuba who inhabit the hills of northern Kordofan.

The elder Pliny preserves accounts of Roman expeditions in 19 B.C. against the Garamantes into the heart of the Fezzan, and mentions two interesting ethnic names which speak for themselves : the Libyaegyptii, who presumably inhabited the Egyptian oases, and the Leucoaethiopes, the ' white Sudanese ' probably inhabiting the Halfa-Dongola reach of the Nile and Selima, and possibly north-east Kordofan.

His names of tribes west of Dongola afford interesting matter for speculation.

Ptolemy who, because he was a good astronomer, has been falsely accused of being a bad geographer with a penchant for rectangularity in siting tribes, covers inner Libya with a mass of names. This siting of nomadic tribes in what is now more or less waterless and uninhabitable desert has aroused the ire of Oric Bates and other students of Libyan ethno-geography, but the discoveries, described below, of rock-pictures at Owenat and near Bir Natrun and Nukheila, of implements in the open desert west of Terfawi, of the great depot of jars at Pottery Hill, all confirm d'Anville's statement that ' Ptolemy was informed of more circumstances of the interior parts of Africa than any other geographer '.

Space forbids amplification of this, but I have prepared a list of identifications from his place-names and tribes with their modern counterparts for publication elsewhere, and am convinced that in them we can trace references to Kufra, Ennedi, Tibesti, and Wadai, and even to hills and water-sources in Dongola, Darfur and Kordofan.

The later Roman and Byzantine geographers need not detain us; but there is a continuous trickle of information from them which bridges the gap between Ptolemy and the medieval geographers. Throughout there is a gradual shifting of tribes to the South. A good deal may be learned by following the movements of the three ethnic groups, the Garamantes, the Mazices, and the Nubae. The Garamantes figure in history for some nine hundred years, and ranged over an enormous territory. Fra Mauro's map of 1457 marks all north central Africa down to Guardafui as Garamita. By the Middle Ages they had become the Gorhani and the Dongola deserts were known as Gorham. Today their name still lingers in the Guraan, a Tibbu tribe inhabiting Ennedi and Jebel Owenat. In fact it is probable that, speaking broadly, the Garamantes were the ancestors and precursors of all the Tibbu in the southern Fezzan and Wadai.

The Mazices figure in history from dynastic times, if we identify them with the Mazoi of the monuments, through Herodotus, Hecataeus, Lucan and others, right up to the present day when they appear as the Imoshagh (Tuareg). They have been placed by various writers all over North Africa, especially Tunis and Cyrenaica. The unknown author of the *Orbis Descriptio Junioris Philosophi* (380 A.D.) describes in the inner deserts ' barbarorum paucam gentem quae sic vocatur Mazicum et Aethiopicum '. This Sudanese attribution was also true of the Mazoi, who lived somewhere in the Halfa region for over two thousand years. It is therefore another piece of evidence of early Libyan penetration into the Sudan.

The Nubae, Nobades, Nubians, etc., are a puzzling racial entity. But we know that some of them were in the Egyptian oases in the times of Lucan and Procopius and that the present Nuba hillmen of northern Kordofan have many old connexions with the Libyan north.

The later classical geographers, who deal with Libya, *e.g.* the Spaniard Orosius (417 A.D.) and the African bishop Corippus (696 A.D.) bring us almost into the era of the Arabian and other medieval historians and geographers. The Arabians are of especial interest as they continue the ' leopard-skin ' picture of the Libyan desert by dotting ' lost ' oases and wells in its interior. El Bekri (1068 A.D.) tells us of the lost oasis of Sobrou somewhere beyond Dakhla and the efforts of a Cyrenaican Emir to find it. Idrisi (*c.* 1140 A.D.) describes the country of the Tadjerin or Tajuwin, which is clearly the Bir Natrun-Nukheila area. Ibn Haukal writes of goats and sheep gone wild in the chain of oases stretching west from the Nile. Ibn el Faqih describes a great west-east caravan route from Gana (the Tunisian oasis of Djanat ?) to ' the Egyptian Oasis Malsana ', (*i.e.* Dakhla). The anonymous history of Siwa, mentioned above, which probably dates from the fifteenth century, speaks of the kingdom of Santaria (Siwa) extending to Nubia, of the ruined Ard el Ghaffar, a country south of Dakhla, prosperous of old, and of the yearly raids in old times by the ' people of Tebu in the Sudan ' upon Siwa. Yacubi and others mention the ' towns ' of Merenda and Marawa, which lay somewhere in the south Libyan Desert. The Rabbi Banjamin of Tudela (1170 A.D.) confirms Ibn el Faqih's caravan route by saying :—' From el Wah (Dakhla) caravans go fifty days through the Sahara Desert to the town of Sawila in Gana '.

To the above evidence we can add a fairly long list of Berber place-names still in current use in Wadai, northern Darfur and northern Kordofan.

These are the elements of the Libyo-Sudanese mosaic. In the centuries before Christ, there were no camels in these deserts. Transport must have been by horse, ox and donkey. There is doubtful evidence of the use of carts. Consequently the desert étapes must have been shorter than they are now, as none of these animals can emulate the long thirsty marches of the camel. This explains the greater frequency of oases and wells in ancient times. For it is clear that between one and three thousand years ago there was greater lateral and vertical movement across the Libyan Desert than there has been since the Middle Ages. What then has happened to all these wells and oases ? A common answer is often given in one word—Desiccation. Geological and historical evidence, at least in the eastern Sahara and the Libyan Desert, is against this. There is no solid evidence that climatic conditions in Egypt or Tripoli or the northern Sudan have changed in the last four thousand years. The Roman system of water-tanks in Marmarica and Cyrenaica points to the reverse for part of that period. Herodotus, several centuries earlier, describes desert conditions equalling those of today. Egyptian archaeological evidence is conflicting. Descriptions of plunder taken from conquered Libyans, the Meshwesh, Rebu, and other tribes, in the eighteenth, nineteenth and twentieth dynasties, show that they possessed numerous herds, which presupposes some water and much grass somewhere, but probably only on the coast ; while the good condition of mud-brick temples, etc., on the Nile and in the oases points to a rainless climate.

The truth probably is that the Libyans were better well-diggers than the Arabs, and occupied many oases, which have since been abandoned and have become silted up with sand. This is, of course, in a sense desiccation, but due to human and not natural agencies.

I have described the historical background of the Libyan Desert at some length, although sketchily, partly because there has been very little written about it, and partly because it is a necessary preliminary to the understanding of the early migrations, which were responsible for the antiquities discovered recently and described below.

I began with Herodotus, the Father of History, for purposes of convenience, but it must not be imagined that the migrations date only from the sixth or fifth century B.C. There are several allusions to Libyans in the Sudan on the Egyptian monuments, from the third millennium B.C. onwards, but the topography is very difficult to disentangle, and the most that we can say definitely is that the Tamahu or southern Libyans had, by a very early date, pressed southwards through the oases of Kufara, Dakhla, Nukheila, Selima, etc., and were on alternate terms of trade and raid, and probably intermarriage, with the negroid races of the northern fringes of Wadai, Darfur, and Kordofan. One expedition demands especial mention. In the time of Pepi II (*c.* 2500 B.C.), we find the Sudanese counter-attacking the intruding Libyans. Harkhuf, an Egyptian trader from Assuan, travelling to the Sudan on behalf of Pepi, met the black raiders coming north. ‘ I set forth upon the oasis road and I found the chief of Yam going to the land of Temeh to smite Temeh . . . and I pacified him ’. This land of

Temeh must have been either the Selima–Shebb–Terfawi area or the Libyan bank of the Halfa Nile.

We may consequently take it for granted that for roughly 3000 years at least, between 2500 B.C. and 500 A.D., Libyans and their descendants, the Tibbu and Berber, were moving across the deserts between the Mediterranean coast and the Sudan, and establishing temporary settlements in most of the habitable oases.

Let us now examine the actual archaeological finds. They are all marked on the accompanying map (fig. 1, p. 268). As the record of their discovery is largely one of travel, they are best listed under the exploratory expeditions in the course of which they were found. The list does not pretend to be complete and does not include dynastic remains, *e.g.* at Kharga and Dakhla, but only such antiquities as are mainly of Libyan origin, and lie in the central and southern part of the Libyan desert.

The greater part of the finds in the south were made in the course of two expeditions of mine, the first in 1923 from El Obeid to Bir Natrun and back, a distance of 1070 miles, of which about half was over desert, and the second in 1927, from El Obeid to Halfa, by Bir Natrun, Nukheila (also known as Merga) oasis, and Selima, a distance of 1015 miles, of which about 700 were within the borders of the Libyan Desert. On both these journeys large stretches of desert were covered which had not been visited by a white man, or in some cases even by the Arabs.[2]

On the 1923 expedition rock-pictures or other antiquities previously unknown except to some of the Arabs, were discovered at four sites.

1. ABU SOFIAN area, about lat. 15° 30′, long. 27° 50′, on two small ridges, one named Qalaat El Wish and the other, further to the south, nameless. These pictures (figs. 2, 3)* are crude drawings incised on rounded boulders. The main representation is of camels, which appear in hundreds. Pregnant she-camels, suckling foals, bodies of camelry with spears and hoisted banners (?), camels carrying two and even three men, camels with waterskins (?) dangling beneath their flanks, are portrayed over and over again. There are also giraffes, ostriches, cattle, antelopes, horses (or donkeys ?) and other indeterminate animals. There are also large numbers of more or less conventionalized human figures. Some are reduced to purely geometrical figures ; others are

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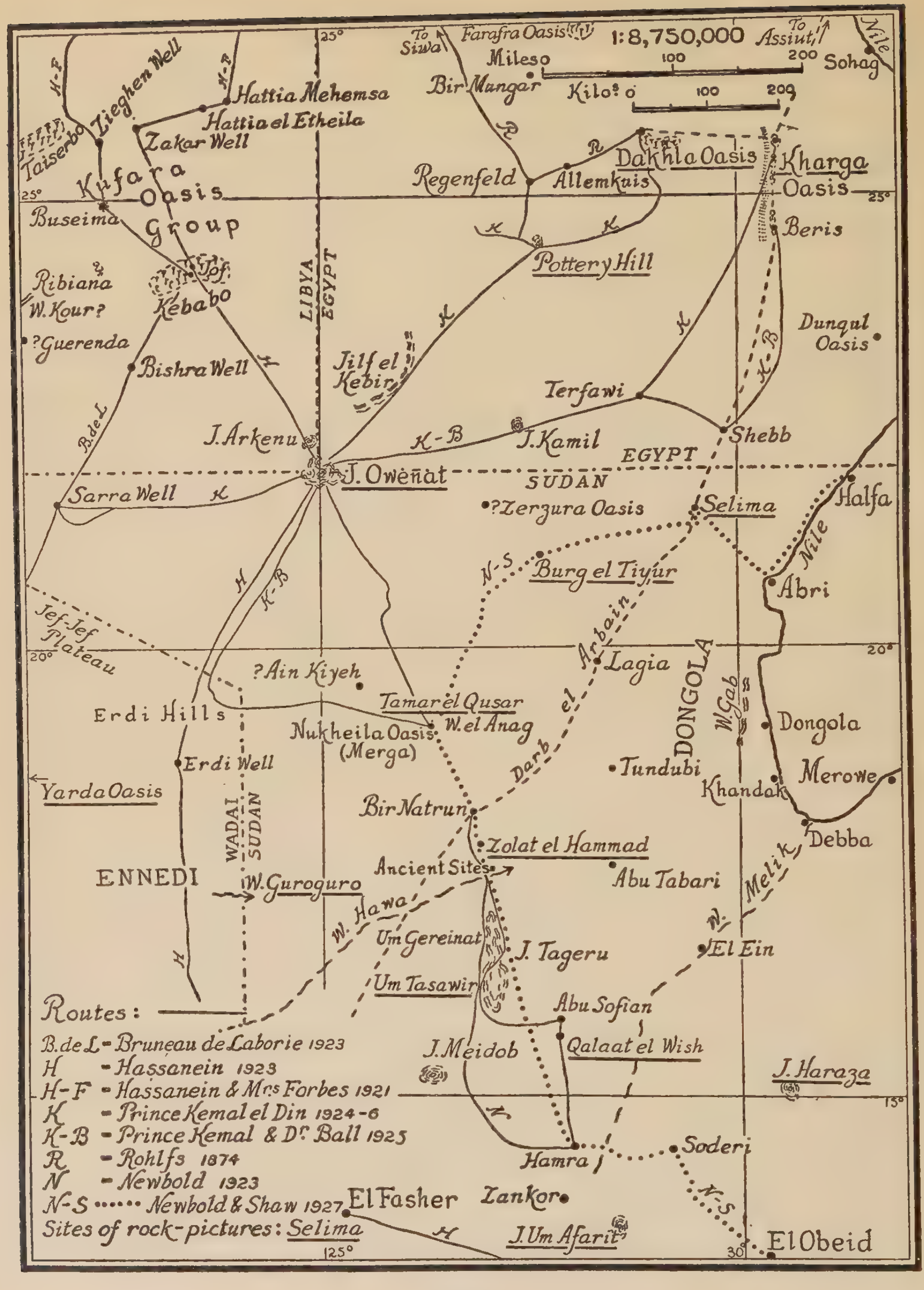
[2] Full narratives of these two expeditions will be found in *Sudan Notes and Records*, vol. VII, no. 1 (1924), pp. 43–92, and XI, no. 2 (1928), which latter will appear towards the end of this year.

* Figs. 2 and 3 in this article are reproduced by kind permission of the Editor of *S. N. and R.*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To Assiut
Nile
Sohag
Bir Mangar
Regenfeld
Allemkais
Dakhla Oasis
Kharga Oasis
Beris
Pottery Hill
Dunqul Oasis
Terfawi
Shebb
J. Kamil
Jilf el Kebir
LIBYA
EGYPT
Hattia Mehemsa
Hattia el Etheila
Zakar Well
Zieghen Well
Taiserbo
Kufara Oasis Group
Buseima
Tas
Kebabo
Ribiana
W. Kour?
?Guerenda
Bishra Well
B. de L
J. Arkenu
J. Owenat
Sarra Well
EGYPT
SUDAN
?Zerzura Oasis
Selima
Halfa
Nile
Burg el Tiyur
Abri
Jef-Jef Plateau
?Ain Kiyeh
Lagia
Darb el Arbain
DONGOLA
W. Gab
Dongola
Erdi Hills
Tamar el Qusar
W. el Anag
Nukheila Oasis (Merga)
Erdi Well
Tundubi
Khandak
Merowe
Yarda Oasis
WADAI
SUDAN
Bir Natrun
Debba
Zolat el Hammad
ENNEDI
Ancient Sites
Abu Tabari
W. Guroguro
W. Hawa
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El Ein
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Routes:
B. de L - Bruneau de Laborie 1923
H - Hassanein 1923
H-F - Hassanein & Mrs Forbes 1921
K - Prince Kemal el Din 1924-6
K-B - Prince Kemal & Dr Ball 1925
R - Rohlfs 1874
N - Newbold 1923
N-S ...... Newbold & Shaw 1927
Sites of rock-pictures: Selima

more lifelike, and show tailed and plumed and phallic men, and one or two swastika figures. The double-plumed head-dress suggests the ostrich plumes worn by the early Libyan chieftains. They appear in Middle Empire reliefs and are especially associated by the classical writers with the Nasamones who inhabited the deserts round Siwa and Augila in the first five centuries B.C.

The presence of camels and indeed the crudity of the drawings show that they are comparatively late work. It is impossible to date them with any precision but they are probably between 2000 and 1500 years old. As specimens of early art they are not of great importance owing to this crudity and their lateness. The chief points of interest are the tailed and plumed men, the swastika figures and the very instructive series of geometrical human figures. It seems ridiculous to assert dogmatically that all the figures in the two top rows of fig. 3 represent human beings, but there is no doubt about it. There are many Continental analogies. One has only to look at reproductions, the stylized figures in the Andalusian caves,[3] especially the cases of Lubrin and Jimena, to see an amazing resemblance. The Spanish pictures are of course, many millennia earlier, being late Palaeolithic or early Neolithic, so the parallel is partly fortuitous, but this tradition of conventional art, in representations of human beings at least, probably crossed to Africa in early Neolithic times and was continued for centuries.

There were numbers of figures like those shown on the bottom row of fig. 3. Even some of these are probably human figures; others may be early camel brands or tribal marks, like the marks found in 1822 by the Beechey brothers in Tripoli, cut upon the rocks in the Syrtis Major.[4]

A number of other antiquities were found at Abu Sofian. This site had not been visited by an European before, and is of especial interest as it lies in the rolling steppe-desert country where the south Libyan Desert merges into the better watered grassy plains of northern Kordofan. The area is rocky and the sites described below lie in a sandy plain surrounded by low hills, some 10–20 miles north of Qalaat El Wish. They include :—

(*a*) a stonewalled hosh or compound near Sheinat el Aja, about twelve miles due east of Id Abu Sofian; it is about 200 yards

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[3] E. A. Parkyn, *Prehistoric Art*, 1915, p. 114. M. C. Burkitt, *Pre-history*, 1921, pp. 283–3.

[4] F. W. and H. W. Beechey, *Expedition to . . . the northern coast of Africa*, p. 161.

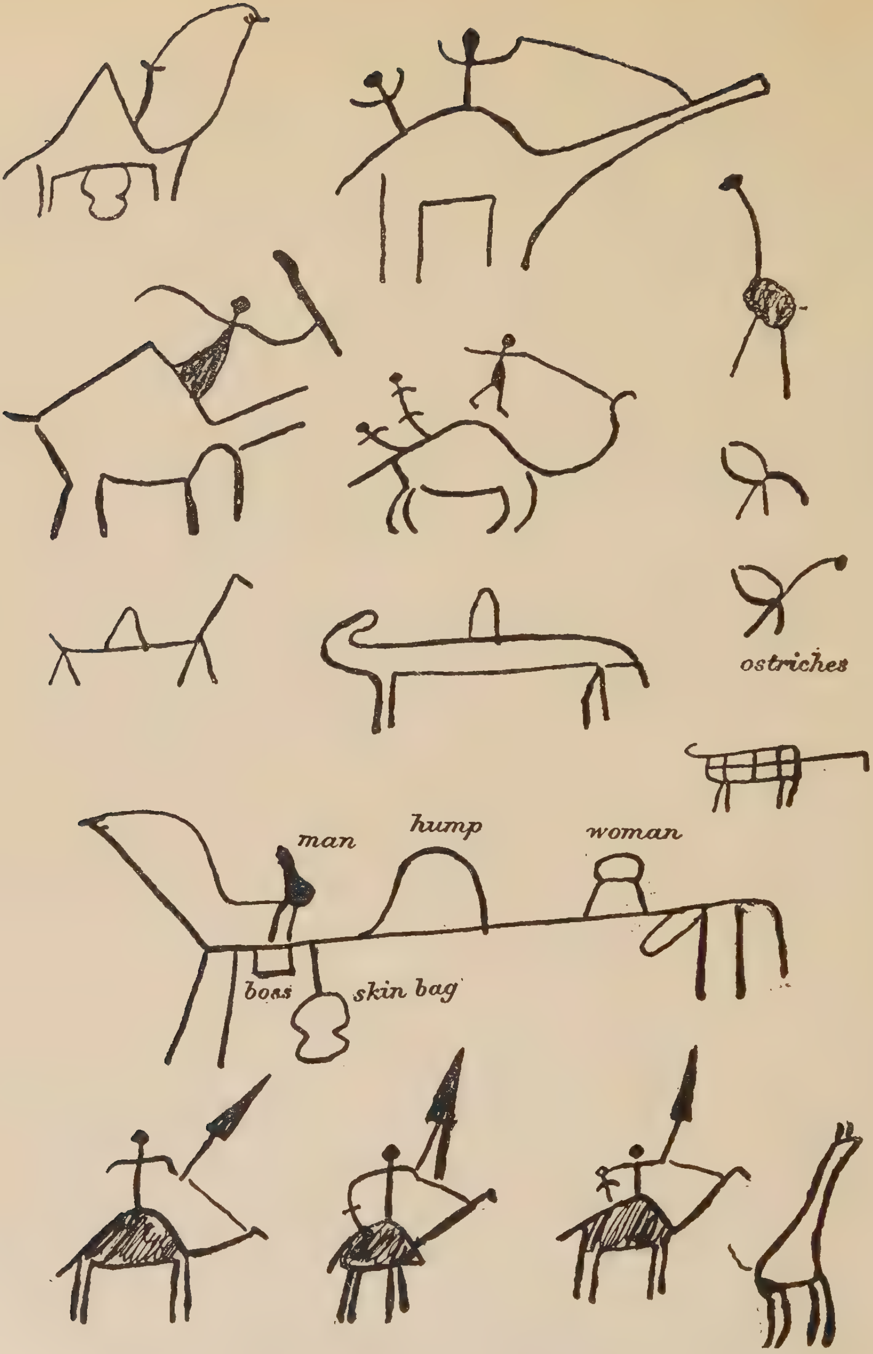

Fig. 2. ROCK-PICTURES AT QALAAT EL WISH, NORTHERN KORDOFAN

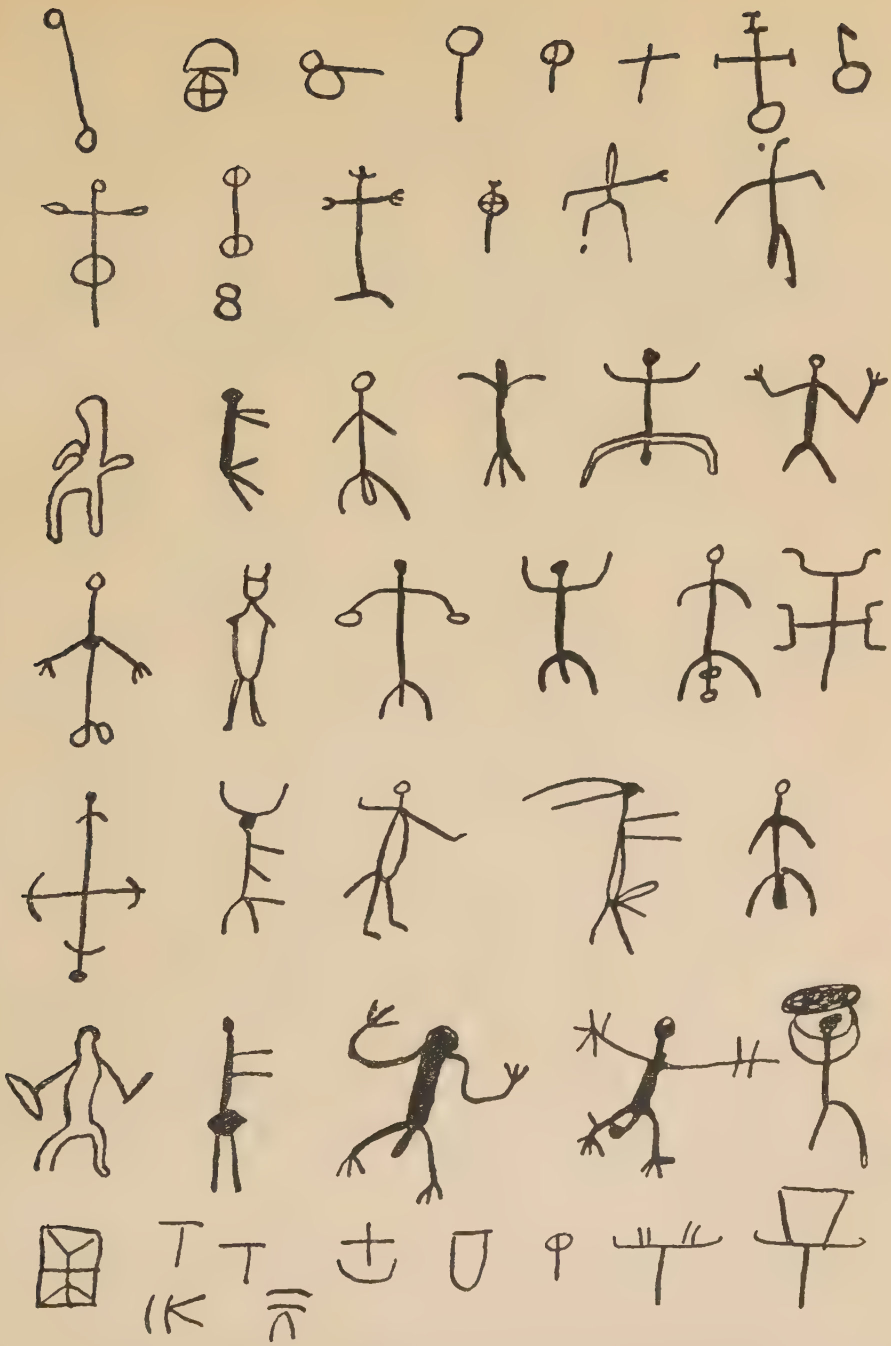

FIG. 3. ROCK-PICTURES AT QALAAT EL WISH, NORTHERN KORDOFAN

square with ruined walls nowhere more than three feet high ; there were scattered pottery and bones inside, and one or two pieces of iron slag. It was surrounded by old sites of habitations or middens with pottery and bones.

(*b*) about ten miles north-east of the well and about eight miles north-west of (*a*) was a group of remains comprising :

(i) another stonewalled compound with a double wall of flat unhewn stones with interspace filled with rubble. Inside stone grave-cairns and burnt brick foundations.

(ii) south of (i) two similar walled enclosures but circular and only twenty yards in diameter.

(iii) a group of three burnt brick ruins : one a circle, one some kind of foundation, one a large heap, possibly a ruined kiln. The bricks were twelve to fourteen inches long by five inches by three and a half inches. Other burnt brick remains are found at Jebel Zankor in western Kordofan,[5] and at Shau Dorshid's palace in northern Darfur.[6]

(iv) a dilapidated baby pyramid of burnt brick, now about twenty feet high, built up of regular courses of red brick cemented by mortar. It has lost its pyramidal shape and the sides are a débris of broken brick, much overblown by sand. I estimated its present height as sixty courses at four inches per course. It is difficult to say how it is oriented as it is not very symmetrical, but it has a flat square top with rounded corners. It appears quite solid to the eye but there may be a concealed entrance at the north-east corner.

(*c*) There were many stone graves at the entrance to Wadi Abu Sofian with two peculiarities distinguishing them from the innumerable similar cairns seen all over north Kordofan and northern Darfur. Some had by their sides circles of biggish flat stones laid flush with the ground and about three feet in diameter, and others had tiny little avenues of long thin up-ended stones leading up to them. The pottery found at and near Abu Sofian included many sherds of good workmanship with impressed designs as well as a wheel-made pilgrim bottle, of the type which has varieties in early Egyptian pottery throughout the first millennium B.C. and several centuries later.

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[5] A fine site with an ancient well, broken sandstone pillars, stone lintels with sockets, containing walls, boneheaps, and innumerable burnt bricks. No description has yet been published.

[6] *Sudan Notes and Records*, January 1920, p. 27. H. A. MacMichael, ' The Tungur-Fur of Dar Furnung '.

The whole of these Abu Sofian sites would repay expert examination and excavation. But until this has been done, judgment should be suspended, and it should not be classed amongst the more purely desert sites. The evidence, as far as it goes at present, would assign it to be middle or late Meroitic period, *i.e.* 100 B.C.–300 A.D.

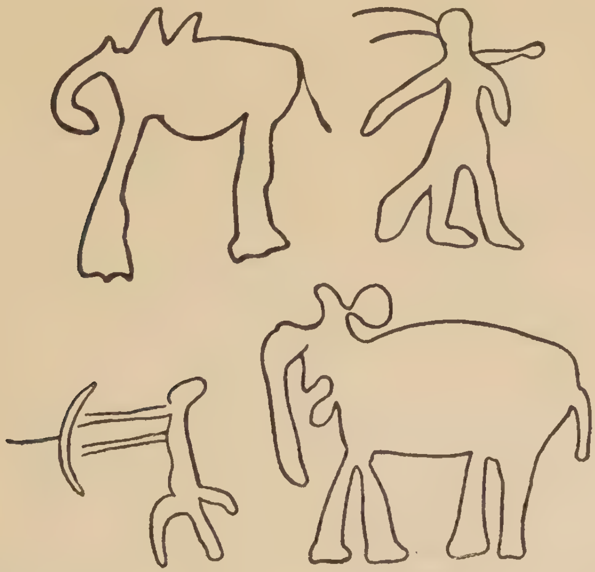

FIG. 4. ROCK-PICTURES FROM UM TASAWIR (MEN) AND ZOLAT EL HAMMAD (ELEPHANTS)

2. Gelti um Tasawir (The 'rock-well of the Pictures') in Jebel Tageru.

This site lay about eighty miles north-west of Abu Sofian about lat. 16° 15′, long. 26° 40′. The rock-well which gives its name to the site lies in a deep chasm where the wadi bed drops by a succession of falls into a narrow ravine with rocky sides about 120 feet high. The cliff-faces are scored with countless pictures even in the least accessible parts. The drawings showed endless cattle, also giraffes, elephants, oryx, and other indeterminate animals. There were also a number of human figures, some showing tails, some armed with bows (see fig. 4), a few phallic and one steatopygous. Here, as far as I could see, there were no representations of camels. The pictures were slightly less crude than the Qalaat el Wish groups and are of rather different style. When I visited this site I had completed 660 miles on camel-back and had been ill with heat-stroke for a fortnight, and so was unable to examine the more difficult parts of the cliff face, but I think it is clear from the copies I took—especially in view of the archers, elephants, and absence of camels—that the Um Tasawir pictures are of the same style and approximately the same epoch as those at Zolat el Hammad, Nukheila, Owenat, etc., which are described below, *i.e.*, early Libyan.

Jebel Tageru, from the flat top of which Wadi um Tasawir drains, is a long low tongue-shaped hill, running 80 miles from North to South and rising about 300 feet above the plain. It is composed of Nubian sandstone. Arab legend says that it was the headquarters of the white giant race of ‘ Anag ’ or ‘ Abu Konaan ’, two names given by the Arabs to the pre-Semitic and pagan aborigines of the northern Sudan. The names recall the biblical Anak and Canaan. There are several connexions between the early Libyans and Syria. However this may be, Jebel Tageru was obviously formerly inhabited. Below its western scarp I picked up a good deal of pottery and a T-shaped iron implement, probably a hoe. West of Um Gereinat, another rock-well, one of my Arab guides found some bones and the sherds of a broken ‘ burma ’ or earthenware jar, which was reconstructed by Mr Addison, Conservator of Antiquities, Sudan Government, and is now in the Gordon College Museum in Khartum[7]. It is wheel-made and was pronounced Meroitic by Mr J. W. Crowfoot. The Arab also brought back a small perfect unpatterned bowl[8] of which two other examples have been found in these deserts.

I passed a large number of grave-cairns on the south-west and west side of Jebel Tageru, and also some grindstones and pestles of sandstone and quartz.

3. WADI HAWA. There were no rock-pictures here, but some very interesting habitation-sites. Wadi Hawa is a great valley, or dry river-bed which rises in French Wadai, probably about lat. 16° and long. 20° 30′, and dies out in the Dongola deserts west of Khandak, after a curved course of about 450 miles.

In the Miocene Epoch it was probably a tributary river to the Nile.

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[7] *S. N. and R.*, vol. VII, no. 1, plate III.

[8] Ibid., plate II.

As I rode across it at about lat. 17° 25′, long. 27° I picked up from the floor of the wadi-bed five stone implements, probably axeheads, ground and edged, but unpolished. A sixth was found a little further north among some old sites on the north bank of the valley, which covered several acres and consisted of scattered patches of bones, pottery, grindstones, and pestles, and many teeth of animals.

In our 1927 expedition Shaw and I revisited this site and after searching the ground more thoroughly found more of the stone implements and a small earthenware bowl like that found in 1923 near Um Gereinat. The six axeheads found in 1923 are figured in plate IV of *S.N. and R.*, vol. VII, no. 1. Four of the axeheads found in 1927 are shown in fig. 5. (nos. 1, 3, 4, 5). They have been identified by Mr G. W. Grabham, Sudan Government Geologist, as being some of porphyrite, some micro-diorite, and some possibly dolerite. These are all igneous rocks and it is rather a mystery whence the material was derived in this enormous area of Nubian sandstone. Judging by later finds they were probably brought from the north.

In type they are unlike any others that I have seen or heard of except (a) a neolithic implement found in Huntingdonshire and now in the British Museum[9] and (b) two implements from America in the Fitch room of the Norwich Museum. I know of no similar African parallels either in the Congolese or South African implements, or the Nilotic types, or in the Capsian culture of Tunis. As they were all surface finds, like most desert implements, dating by stratification is impossible. There was no patination. The biggest weighed two and a half pounds. All had grooves for hafting or gripping except one triangular specimen with smooth sides (fig. 5, no. 3) very like an implement found by Mr Van der Byl in 1923 when hunting addax in the Wadi Hawa further south-west.

The pottery associated with the axeheads is probably Meroitic but may be earlier. The axeheads may also belong to the same period, but if both pottery and axeheads are to be associated with the rock pictures of Um Tasawir to the south and Zolat el Hammad to the north (described below), neither of which portray camels, then their latest date is early Meroitic, say B.C. 200. But until the site is excavated it would be unwise to do more than speculate. I should not be surprised to find them eventually dated B.C. 2000, or even earlier.

It is not easy to say whether the site was a permanent habitation

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[9] Evans, *Ancient Stone Implements*, fig. 83 (a) p. 137.

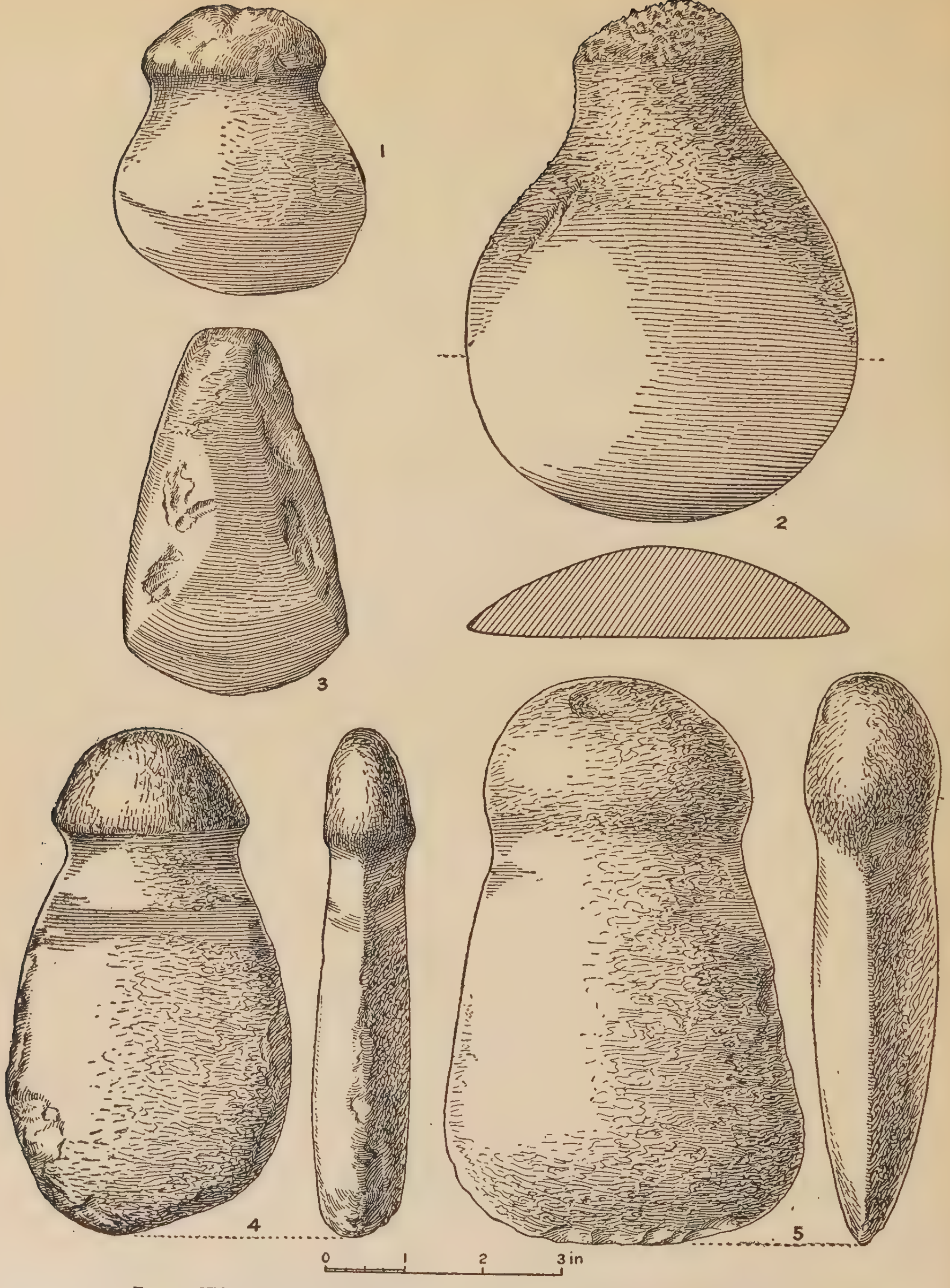

Fig. 5. STONE IMPLEMENTS FROM WADI HAWA (1, 3, 4, 5) AND NUKHEILA (2)

or only a regular halting-place. If the masses of broken pots were used as a water-dump, it might only be the latter, but the other relics and above all the advantages of the site on the banks of this broad valley with its good grazing and abundant game, point to the former. The Wadi Hawa is destitute of wells now, but water could probably be found at a fair depth.

4. Zolat el Hammad. This group of rock-pictures had been reported by the Arabs for several years, but had not been seen by a white man, till I visited it in 1923. The long ridge of Zolat el Hammad lies in lat. 17° 50′, long. 26° 50′, about thirty miles north of the Wadi Hawa, and the pictures (plates I, II, and III) are cut on boulders on a steep hill-side near a clump of bushes and trees called Waara el Gilud (' The coppice of the Skins '), because the Howawir discovered the pictures in 1917, when skinning slaughtered game here. A number of these pictures are shown on plates V and VI in *S. N. and R.*, vol. VII, no. 1. But when Shaw and I revisited them on our 1927 expedition, we examined them more carefully and discovered a fresh group and Shaw took more photographs. They are all incised on boulders as at Um Tasawir, and are identical in technique and similar in subject. There are represented tailed phallic and plumed men, elephants, giraffe, ostriches, oryx, cattle innumerable, dogs, and several other animals difficult to determine, but possibly including monkeys, addax, rock-rabbits and a lion. There were no camels.

Ostriches, addax, oryx, rock-rabbits and a species of lion[10] exist at present in these deserts. Giraffe were found in northern Kordofan in the last century, as native tradition and Arab place-names testify. The elephants were quite distinctly drawn (see fig. 4) and in this remote desert recall Swift's lines:—

Geographers in Afric's maps
With savage pictures filled the gaps
And o'er unhabitable downs
Placed elephants for want of towns.

It is curious that on several medieval maps elephants are drawn in on the blank spaces of the south Libyan Desert. Unless we imagine a total change of climate, it is inconceivable that the trumpeting of elephants could ever have resounded among these sterile hills. But the elephant was known in coastal North Africa in pre-Christian times and disappeared with the Roman conquest of Numidia. There were elephants in Dongola in the first century B.C. and they lingered in the high Atlas of Morocco until the Arab invasion.

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[10] No specimen has been killed by a European. The last lion in Tunisia was shot in 1891. Lions were tamed by the Dynastic Egyptians.

The pictures were all more or less weathered. In most the outline only was incised, but in a few the whole body was cut out. The drawings were mostly from twelve to eighteen inches long, but some giraffes had necks two feet long.

The hunting dogs were spirited drawings (see plate III), and are of peculiar interest. There is a good deal of dog folk-lore in the Libyan Desert. Pliny tells how a deposed king of the Garamantes regained his throne with the help of an army of dogs. He also mentions a tribe called the Ptoenphae—who must be the Ptoenphanae placed by Ptolemy in this very area—who had a dog for a king and divined his commands from his movements.

Going further back into dynastic times, we find that the Libyans used hunting dogs as do the nomads of North Africa today. On a stele of Antef II, who was an Egyptian Nimrod, we find the names of five of his hounds, of which two are Libyan, Bakaru and Takaru. This second name recalls Jebel Tageru, mentioned above, Tekro well between Kufara and Tibesti, and the Tekhro peak in Jebel Meidob.

Zolat el Hammad is only a day's march south of the oasis and salt-pans of Bir Natrun, which was the northern limit of my 1923 expedition. There are no antiquities at Bir Natrun, which has been visited by about half a dozen Englishmen, of whom the first was W. G. Browne in 1793.

In November and December 1927 W. B. K. Shaw and I carried out a long cherished project to visit Nukheila oasis, 65 miles north-west of Bir Natrun, and to explore the unknown desert which lay between it and Selima to the west of the Darb el Arbain, the famous ‘ Forty Days ’ road from Assiut to El Fasher.

We covered no new ground between El Obeid and Bir Natrun (467 miles) but revisited, as mentioned above, the sites at Wadi Hawa and Zolat el Hammad.

On 25 November 1927, we left Bir Natrun with a caravan of about thirty men and forty camels and in two and a half days reached Nukheila. We were not the first civilized travellers to penetrate to it as Prince Kemal el Din Hussein and Dr. John Ball, Director of Desert Surveys, Egypt, had reached it from the west early in 1925, with a column of Citroen cars. No full account of their expedition has yet been published, but we had seen Dr. Ball and learnt that while they had found stone implements, and fragments of grindstones in many places on the open desert during their exploration from Terfawi to Owenat, Owenat to Erdi, and Erdi to Nukheila, they had found no antiquities in Nukheila oasis itself. This was disconcerting as I had tentatively marked down the route of the invading Libyans from Cyrenaica and Fezzan to Kordofan, as Kufara–Owenat–Nukheila–Bir Natrun–Zolat–el Hammad–Jebel Tageru. However, we hoped that a more thorough examination of the oasis would reveal something.

Our hopes were fulfilled as we found three groups of rock-pictures and an ancient site like those at Wadi Hawa. These all lay to the north-east of the oasis, in an area not visited by the Prince and Dr Ball.

The sites were as follows :—

(*a*) 10½ miles north-north-east of Nukheila lake is a small conical hill about 20 feet high, composed of weathered sandstone standing among a group of similar hills in a tiny depression. Pictures were found incised on the lee (south-west) side of this hill, showing men, cattle, giraffes and other animals. There was one interesting drawing of a giraffe with a curiously curved neck and horns curving wrongly backwards. It looked a later work and had had four lines cut across the neck as though to show it was a mistake. Perhaps it was the work of an imitator. The human figures were purely conventional and resembled those at Um Tasawir. The cattle and giraffes are clearly of the same school as Um Tasawir and Zolat el Hammad. Some of the cattle were picked out in chess-board squares, which was common at Zolat el Hammad. The general style was rather crude. The drawings were from six to eighteen inches long.

(*b*) A small group of about ten drawings was found incised on some rocks on the west face of a bluff one and a half miles south of Tamar el Gusar, overlooking Wadi Hussein. They were mainly of cattle, some picked out in squares. Several were almost eroded away.

(*c*) A bigger and more interesting group of pictures was found incised on the rocky sides of three sandstone hills about three miles north of (*b*). Some are cut in positions now almost inaccessible owing to falls of rock. The majority are on a small hill shaped like a sphinx, and include a row of coloured pictures on the south-east side, on a concave surface about thirty-five feet from the ground and visible from the foot of the hill. They show a procession of cattle and the colouring is apparently from rubbing with friable red sandstone. The other animals shown are giraffes (see plate VIII, fig. 2),—two of which are noteworthy for the faithful representation of the protuberant chest,—addax, oryx, and other antelopes (?). Altogether there were over a hundred pictures, many much weathered.

There was also a group of three pictures cut much more recently, as they showed fresh white weathering, probably the work of Guraan raiders from the west. They included very bad drawings of a sheep and an addax.

(*d*) A prehistoric site was found by Shaw in a water-bearing depression which we named Wadi el Anag in long. 19° 50′, lat. 26° 50′, about twenty miles north-east of Nukheila lake ; it is very like the Wadi Hawa sites. There were the usual grindstones, pestles, broken pottery, ostrich egg-shells, a grooved sandstone polisher for arrows or bone implements (fig. 6, no 2), and another of the green axeheads. On a hill above the site were two crude rock-pictures of the type described above.

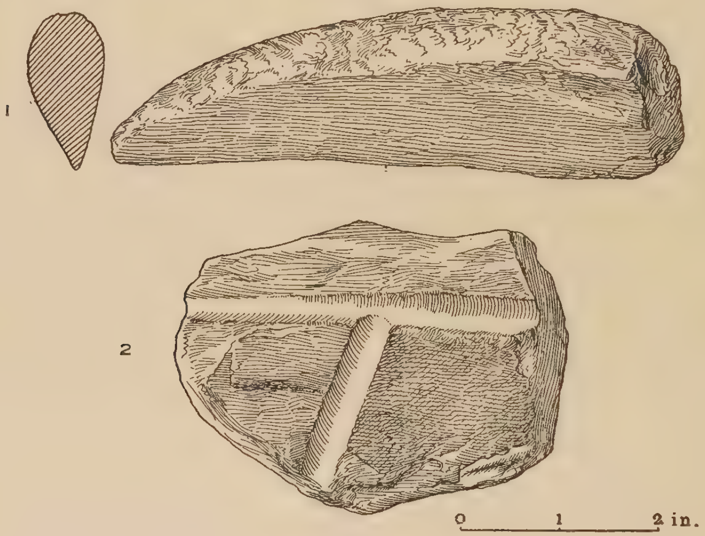

FIG. 6

This site is of importance as establishing the northern origin of the Wadi Hawa objects. The grooved sandstone polisher was similar to one which we had picked up about three weeks previously at El Jihaf (lat. 16°41′, east side of Jebel Tageru), and which had four narrow grooves. The axehead was of the same type and rock as those mentioned above. It seems clear that here lived the artists of the rock-pictures described in (*a*), (*b*), and (*c*).

Four miles north of (*d*) we found a large number of sandstone pestles on the north side of the floor of Wadi Hussein ; and one march further on, at a point some thirty-five miles north-north-east of Nukheila lake, on the open desert, we found another stone axehead (fig. 5, no. 2) lying half-buried in the sand. It was of the same green rock as the others, but was of far better workmanship with a smooth ground surface and perfect rounded edge. It weighs 2¼ lbs., and is nearly seven inches long. One side is flat and the other convex. It should not be called an axehead, strictly speaking, as it was probably a hoe, gripped in the hand.

This exhausts the list of antiquities which we found at Nukheila and its environs. It is probable that a closer search would reveal more dwelling sites and rock-pictures, especially to the north-west.

Between Wadi el Anag, which is the last outlying oasis of the Nukheila depression, and Selima oasis—our objective west of Halfa—stretch 240 miles of utterly unknown desert. We had planned to cut across it in a great curve to the west, extending the distance to 275 miles in order to pass through the area in which the ' lost ' oasis of Zerzura is supposed to lie. This legendary place has figured for over a century in Arab oral tradition, and is mentioned in a native manuscript ascribed to the fifteenth century. Lack of space forbids my detailing the evidence, which is voluminous but vague.[11] We did not find Zerzura, but I still believe it may exist about long. 27° 15′, lat. 21° 30′.

The country between Nukheila and Selima is waterless and featureless. For ten days our caravan plodded over the most forbidding desert I have ever seen. There were no hills of any size. Long stretches of flat disc-like desert, with its sandy surface unbroken by a bush or a blade of grass or a pebble, alternated with successions of little broken rocky ridges. It was a blank upon the maps and equally unknown to the Arabs. We marched entirely on compass bearings and carried a theodolite.

The only sign of life was an occasional skeleton of a migrant bird. Never was there a piece of the world's surface less promising for archaeology. It seemed inconceivable that any human being in any age could have set foot in this amazing wilderness, and yet on the fifth day out of Wadi el Anag, at the end of a heartbreaking march of twenty-one miles over hard drift sand, we came on a prominent solitary rock, 165 miles north-north-east of Nukheila lake, and 125 miles west of Selima oasis, in lat. 20° 56′, long. 27° 40′. It was composed of hard sandstone and, though only rising some twenty-five feet above the plain, was visible from eight miles away. On one of its sides Shaw discovered a solitary rock picture of an ox (plate VIII, fig. 1) and I picked up a pestle and some ostrich egg-shells, sure signs of ancient occupation. We named this rock Burg el Tiyur, ‘ Tower of the Birds ’, because it was littered with scores of skeletons of migrating birds, obviously casualties from a regular migrant stream across the Libyan Desert.

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[11] See W. J. Harding King's *Mysteries of the Libyan Desert*, 1925, pp. 51–4 and Dr J. Ball's 'Problems of the Libyan Desert', *Geographical Journal* July, Aug., Sept., 1927, and appendix 9 to my forthcoming article in *S. N. and R.*, vol. XI, no. 2.

Burg el Tiyur lies almost on a straight line drawn between Bir Terfawi and Nukheila. Native reports speak of a former road between these places ; it is 300 waterless miles, but it is a possible route, and Burg el Tiyur would be a natural landmark under which to halt. We can only surmise that the rock-picture was drawn by a casual traveller. There is no water nearer than Lagia wells 85 miles to the south-east. The picture is of the same type and probably same early date as those at Nukheila.

From Burg el Tiyur, which was approximately the furthest point we reached in the unknown desert, we turned east and marched to Selima, which we reached in four and a half more days over barren desert. About fifteen miles south-south-west of Selima, I found another stone pestle. Comyn in 1908 mentions the discovery of a grindstone forty miles west of Selima, and found a human jawbone further west still.

On 16 December 1928, we reached Selima oasis, and spent three days there. It is a well-known station on the famous Forty Days’ Road and has been visited by a number of explorers and archaeologists between the seventeenth century and today. Its only antiquities are (*a*) the so-called ‘ convent ’, which is an alleged early Christian stone building of seven rooms or cells, in a fair state of preservation, and (*b*) a large number of marks and signs cut on the masonry blocks of the convent itself and also on the natural rock platform on which it is built.

The latter, a few of which are illustrated in figure 7, are interesting even if only from their puzzling nature. It is easy to see, not only from the Arabic date A.H. 1321 (=A.D. 1902), but also from the weathering, that some are quite modern. Others are probably older, but the majority, if not all, are Islamic, as the name Allah occurs continually.

Some may be medieval. They are very numerous and include three undoubted Cufic inscriptions, some modern Arabic writing, and a number of designs, some possibly cabalistic, but most probably tribal marks or camel brands. It is impossible to disentangle and date them all, but it is obvious that there has been continuous engraving and scrawling on the stones from at least the early Middle Ages till today. A few resemble the Tifinagh writing of the Tuareg, others look like conventional figures of men, while some resemble well-known camel brands, which have been in use for centuries, notably the Rigl el Ghorab, or Crow's Foot, used by the Fezara section of the Nuba of Jebel Haraza, Kordofan, by the Tunjar of Darfur and Wadi, and by the Orfella of Tripoli.

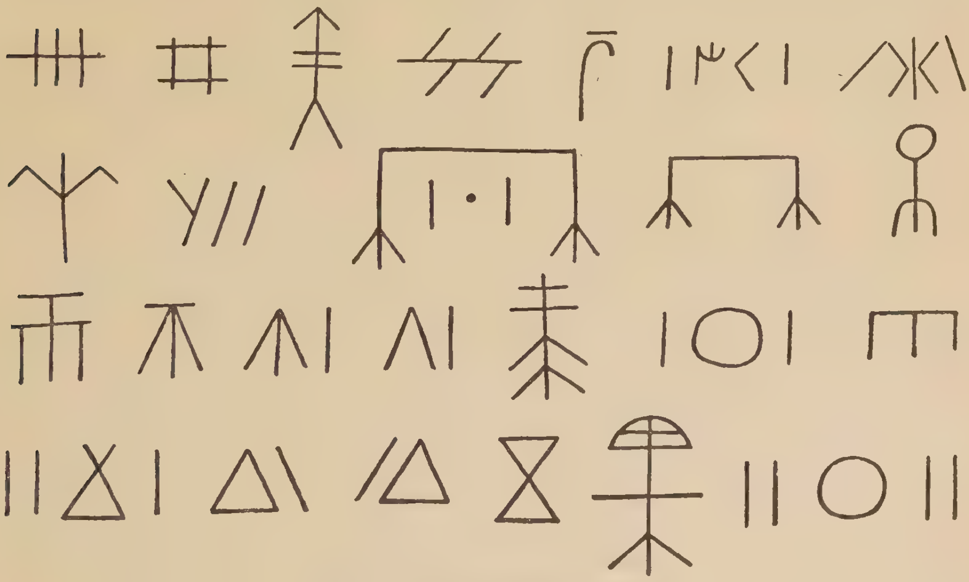

FIG 7. ROCK-CUT DESIGNS AT SELIMA

Several of the marks, which are very numerous, can be paralleled among (i) those found scratched on rocks in Tripoli by the Beechey brothers over a century ago, and (ii) the rock scorings found on the Gubari road between Kharga and Dakhla oasis and published by Mr Harding King. These include, beside drawings of camels, horses, ostriches, men and even boats, a mass of designs and geometrical figures.

It may be mentioned here that we had found a few rather similar designs, but including also some rough drawings of the rayed sun, on a small much weathered rock on the south-west side of the lake at Nukheila. They may have been just modern scratching by Guraan raiders and I believe some are not unlike the Guraan camel brands. They are however too few and too faint to merit more than conjecture.

These, then, were the archaeological finds of my 1923 journey and Shaw's and my 1927 expedition. They help to establish some of the links in the Libyan archaeological chain, especially if considered in conjunction with other discoveries both to north and south.

South of lat. 15°45′, that is south of the Abu Sofian sites, northern Kordofan and northern Darfur are full of archaeological remains. But here the desert is gone and there are rolling grassy plains with valleys full of trees and a fair rainfall. It is probably in these latitudes that the Tamahu or Southern Libyans first encountered the black aborigines in the third millennium B.C. The resulting fusion produced the Leucoaethiopes or Nuba. There were moreover cross-currents of migration from east to west. An ethnic tangle was created which makes it impossible to draw any definite archaeological conclusions from finds in this area.

The actual remains consist of rock-pictures, innumerable stone burial-cairns, some burnt-brick remains, ancient walled enclosures, relics of iron-smelting (much of this, however, is recent), and stone implements and stone rings. To these must be added a number of Berber place-names.

The rock-pictures of north Kordofan have been described by MacMichael.[12] They occur at Jebel Haraza, and at Jebel el Afarit. The Haraza pictures are divided by MacMichael into three groups. The first, at Jebel Shalashi, are spirited and highly finished paintings of horsemen, giraffes, hyenas, gazelle, and cattle; some thirty are in red and some half dozen in white pigment, none are graven. There are no camels. There is one white picture superimposed over red, and one of an animal making water. The second group is at Jebel Karshul, and are also paintings in red pigment on the face of an overhanging rock in a cave. Many are now indecipherable probably owing to rain. Men, horses and camels are portrayed. The workmanship is much inferior to Shalashi. This group, says MacMichael, ‘ almost exactly correspond to the common “ Libyo-Berber ” rock-pictures found over the greater part of North Africa and the Tawarek country and described *e.g.* by Mr Flamand in *L’Anthropologie*, vol. viii, 1897 (Notes sur deux pierres écrites provenant d’El Hadj Mimoun, region de Figuig)’. The third group are very crude drawings of camels and mounted men chipped on small granite boulders lying in drift sand.

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[12] H. C. MacMichael, ' Rock Pictures in Northern Kordofan ', *J.R.A.I.* xxxix (1909), 563.

In 1922 I found a fresh group at Haraza on an undercut weathered boulder at Gelti el Naga on the south-east of Jebel Belbeldi. There were sixteen figures in red pigment, showing camels and conventional men. The pictures at Jebel el Afarit are in blue-black pigment and show mounted men and men with shields. There are no camels. The workmanship is poor. Jebel Haraza is rich in stone grave-cairns, ancient wells, and relics of iron-smelting. A native manuscript on the Sudan[13] states that Jebel Haraza, which the author calls Jebel Abd el Hadi, was the capital of the Nuba Kingdom in the time of King Taharka (663-658 B.C.)

It is difficult to say how far these Kordofan rock-pictures or any group of them are of the same school as those I discovered further north. They must however be of Libyan origin, although the artists may not have been the tribesmen passing south past Bir Natrun and Tageru, but invaders coming eastwards through Wadai and Darfur. The greater preponderance of horses is significant. But the mixture of Libyan, Nubian and negro and later Arab, in this pasture belt studded with hills lying between Abeshr and Khartum is so confusing that it would be unwise to attempt more than description of sites. It is to be hoped that proper excavation will be undertaken at Jebel Haraza and the brick village of Jebel Zankor.

We turn with relief to the rock-pictures found by Ahmed Bey Hassanein at Owenat, in 1923, and revisited in the winter of 1924–5 and in 1926 by Prince Kemal el Din Hussein, who discovered more groups. They are fully described by the Abbé Breuil in a recent article[14]. Unfortunately the reproductions (which consist of eighteen photographs) are so small and poor that it is difficult to follow intelligently the admirable description of the different subjects by the Abbé.

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[13] Numbered D4 in MacMichael’s *History of the Arabs of the Sudan*. The title is ‘ A compendium of the History and Geography of El Nubä ’ and the author one Daud Kubara ibn Suleiman.

[14] ‘ Les Gravures Rupestres du Djebel Owenat ’, *Revue Scientifique*, 25 Feb. 1928.

Jebel Owenat is a mountain mass of 1500 square kilometres situated in the heart of the Libyan Desert at the intersection of lat. 22° and long. 25°. It rises to a height of 6132 feet above sea-level and geologically is an igneous island in a sea of Nubian sandstone. It has a fair water-supply in the shape of eight known rock-wells apparently fed by rain. The main vegetation is acacia, tamarisk and *had* grass. All the pictures are engraved on the sides of valleys or *karkurs* cutting into the hillside. The best group were found by Hassanein in the Karkur Talh. There is a good photograph of some of these on p. 204 of his *Lost Oases*. Other groups were discovered by Prince Kemal el Din in Karkur Ibrahim and Karkur Hamid.

The pictures show men and women, giraffes, ostriches, antelopes, cattle, horses, wild sheep, dogs (or jackals ?), a hippopotamus or rhinoceros, and some crabs (?). Bows, spears and shields figure. One man is ithyphallic; another wears a short tunic; several are shown horned or plumed.

There are two figures of camels, which from the fresh appearance of the incisions are obviously quite recent and can therefore be ignored. A third, however, ‘semble trop patiné pour être récent’, (Breuil's fig. 61). Patination is an unsafe guide. This camel may well be early medieval. Anyhow it is only a solitary specimen and, generally speaking, the Owenat pictures must belong to the pre-camel era, that is before 100 B.C.

Abbé Breuil divides them into various age-groups. Some he attributes to the hunters of the upper palaeolithic age, especially the very realistic giraffes and ostriches. They are of the same style as the best Bushman drawings in South Africa. Some, especially the camels and perhaps the few dogs, he believes are modern. The remainder, a large number, are of one school, but can be subdivided into two groups; one better-drawn and usually ‘pecked’, which Breuil calls v^a, the other, v^b, more conventional and incised on outline. They have many analogies, the former group with Egyptian designs, especially pre-dynastic, and the latter with the rock-pictures of the French Sahara. They would probably therefore date from the fifth millennium B.C. as far perhaps as the first millennium B.C.

Breuil compares v^b with the pictures at Um Tasawir and Zolat el Hammad, only two of which recall to him v^a. The big-horned *Bos africanus* of proto-dynastic and Old Empire times is the commonest type of cattle represented at the three sites. It was replaced in the Middle Empire by *Bos brachyceros*. Owenat v^a has only *Bos africanus*, but v^b has both.

As far as I know, none of the drawings discovered on either of my expeditions are of the realistic Bushman school. This style is unmistakable.[15] Abbé Breuil has assured me that there is no question but that his group 1 of Owenat belongs to it. It is generally supposed that the Bushmen came from the north and it is held that they were sprung from the Grimaldi negroids of palaeolithic times, who crossed to Algeria and found their way south by degrees. It is a far cry from Mentone to the Cape, but we know of other early culture-drifts of comparable distance. Alternatively there may have been an artistic negroid community in the Sahara in palaeolithic times, whose art spread both north and south.

I have dealt with the Owenat drawings at some length as this mountain mass is a key-region in Libyo-Sudanese archaeology.

Other finds of rock-pictures which should be considered in conjunction with Owenat and the discoveries of Shaw and myself, are :—

(1) Jebel Guroguro (long. 19°, lat. 17° 45′); rock-pictures reported to me by Arabs in 1922. No European has seen them. They include a series of mounted men.

(2) Yarda oasis, Borku (long. 19°, lat. 18° 40′); rock-pictures representing horses, camels, dogs, ostriches, and hippopotami; discovered by Col. Tilho about 12–15 years ago.[16] They are very similar to those at Qalaat el Wish.

(3) The Grotto of In-Ezzan, a few miles north of the Tropic of Cancer and east of long. 10. Rock-pictures, none incised, some done with ochre, others with a white paint, in good preservation. Discovered first in 1923.[17] This is a very interesting site. There are resemblances to very early Spanish paintings *e.g.* Cogul, Alpera, Minateda, to predynastic Egyptian art, and to Bushman paintings. There are also some medieval and recent drawings and inscriptions in Arabic and Tifinagh. Its geographical position, almost at the Western terminus of the great east-west caravan route of the early Middle Ages from the Nile to the Fezzan, is of peculiar interest and it provides a useful link between the Sahara and the Libyan Desert.

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[15] Excellent reproductions are given in Miss Helen Tongue's *Bushman Paintings*, 1909.

[16] Tilho, 'The Exploration of Tibesti, etc., 1912–1917'. *G. J.* lvi (1920), p. 258 and photograph p. 88.

[17] Description by H. Breuil in *L'Anthropologie*, xxxvi (1926), p. 409. Notice in ANTIQUITY, I, p. 353–5.

(4) Abu Ballas, or Pottery Hill, mentioned above. Three striking rock-pictures,[18] one of a tall man in profile, ' de style nettement egyptien dynastique ' ; the second of a bearded Libyan hunter chasing an antelope with a bow and handful of arrows, and a hunting dog : ' on peut sans doute rapprocher cet archer des figurations de Lybiens des plaques de schiste egyptiennes protodynastiques '. The third is a cow (*Bos africanus*) suckling a calf. All three are probably contemporary.

There were also found a large number of designs scratched on the jars here. They are, according to Prince Kemal el Din, clearly tribal marks, probably medieval, of Guraan and other Tibbu raiders. But some of the jars, especially the ovoid specimens, may go back to dynastic times.

(5) The rock-pictures of Aïr, some of which are described and illustrated by F. R. Rodd in his book on the Tuareg, *The People of the Veil*. It is clear that more exploration is needed here and to the north-east, in order to link up with Nachtigal's work in Tibesti.

(6) The whole corpus of Algerian drawings collected in Frobenius and Obermaier's monumental *Hadschra Maktuba* (Munich, 1925). The group which bears most resemblance to the pictures at Nukheila, Um Tasawir, and Zolat el Hammad, is that at Thiyut, 15 kilom. ENE of Ain Sefra, first discovered in 1847. Here are men with shields, a plumed archer, hunters with dogs, cattle, antelopes, ostriches, lions, and an elephant. Although the bulk of Algerian and Saharan rock-pictures probably range from slightly pre-Roman to early medieval times, there is left a scattered residuum of examples—some portraying extinct animals e.g. *Bos bubalus*, some showing dynastic Egyptian influence, e.g. the crowned ram of Abu Alem—which must be assigned to a far earlier date. If we are to accept with all its implications a Bushman attribution for some of the In-Ezzan and Owenat pictures, this date is pushed back to the late palaeolithic age, say at least 12,000–10,000 B.C. In fact it appears that with each succeeding discovery archaeologists antedate the North African rock-pictures more and more. At the same time it must be borne in mind that both in the Tuareg country and in South Africa and probably elsewhere rock-pictures, differing only in subject and not always in technique, are still being made today. Until, however, we can find associated *and* stratified implements or other remains on a rock-picture site, the chronology must remain vague. It

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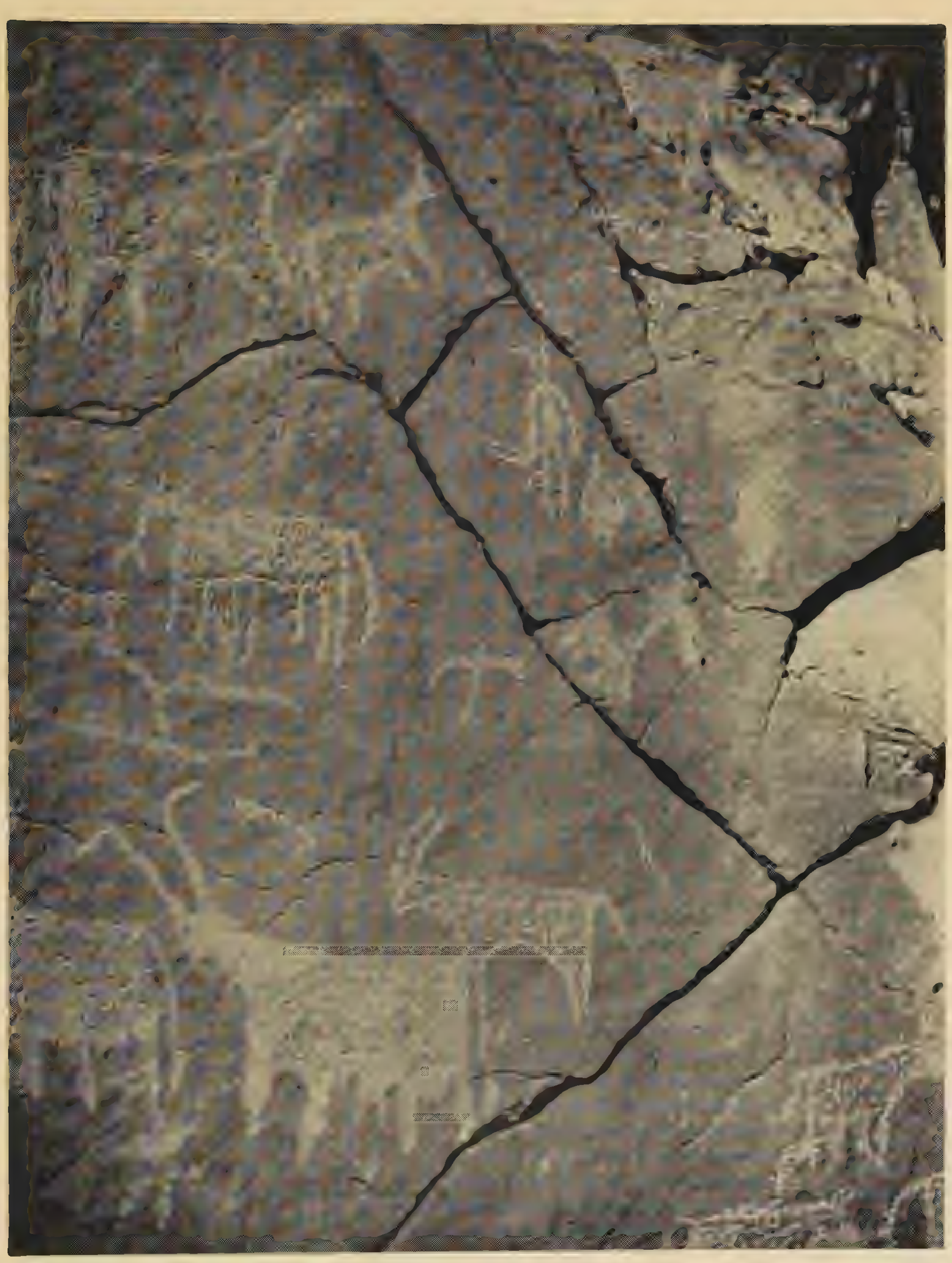
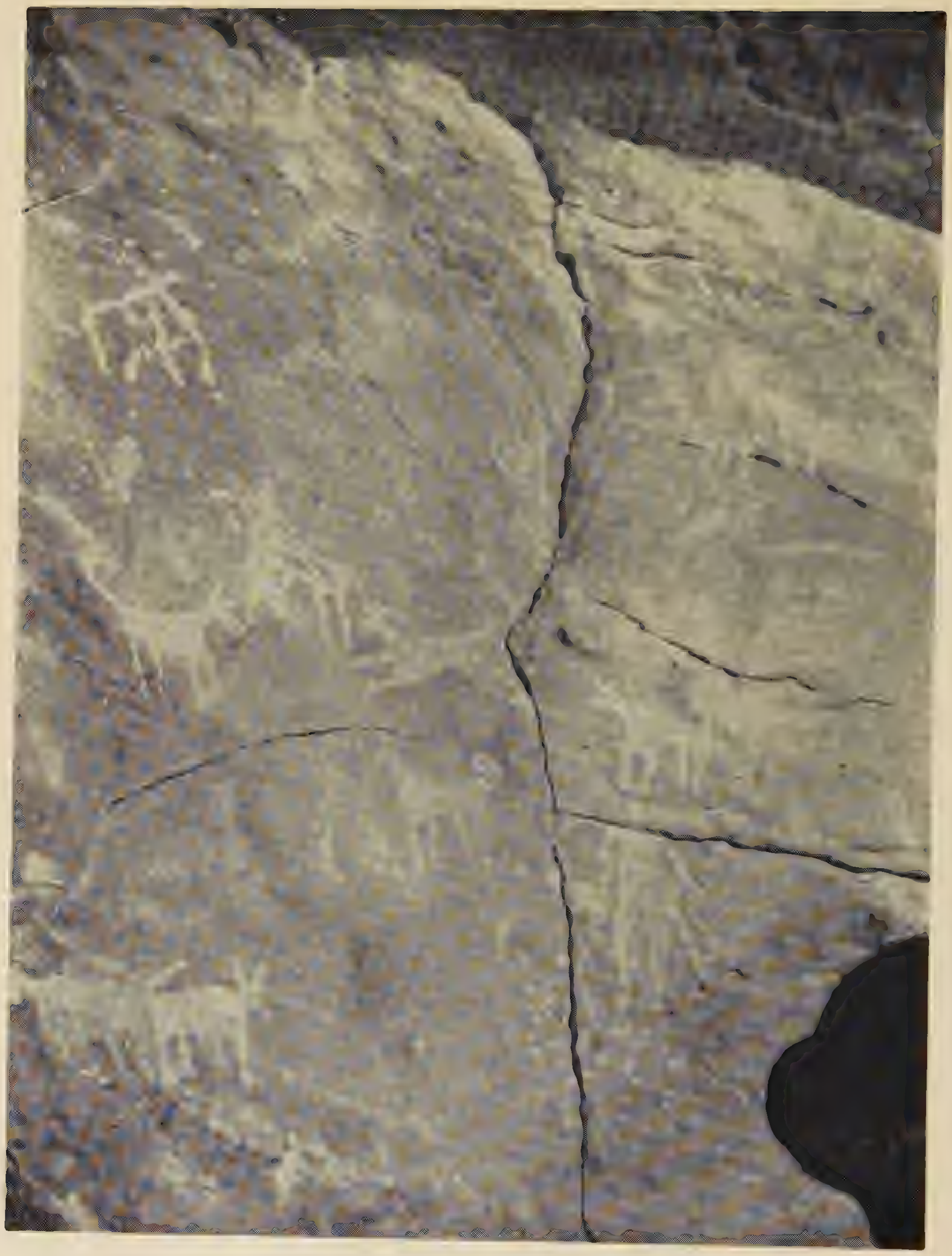
[18] Figured in the article on Owenat in *L'Anthropologie*, and also in ' Les Depots de Jarres du Desert de Lybie ', *Revue Scientifique*, 1927. Prince Kemal el Din Hussein and M. L. Franchet.

PLATE II



ROCK-PICTURES AT ZOLAT EL HAMMAD
Ph. W. B. K. Shaw

facing p. 288



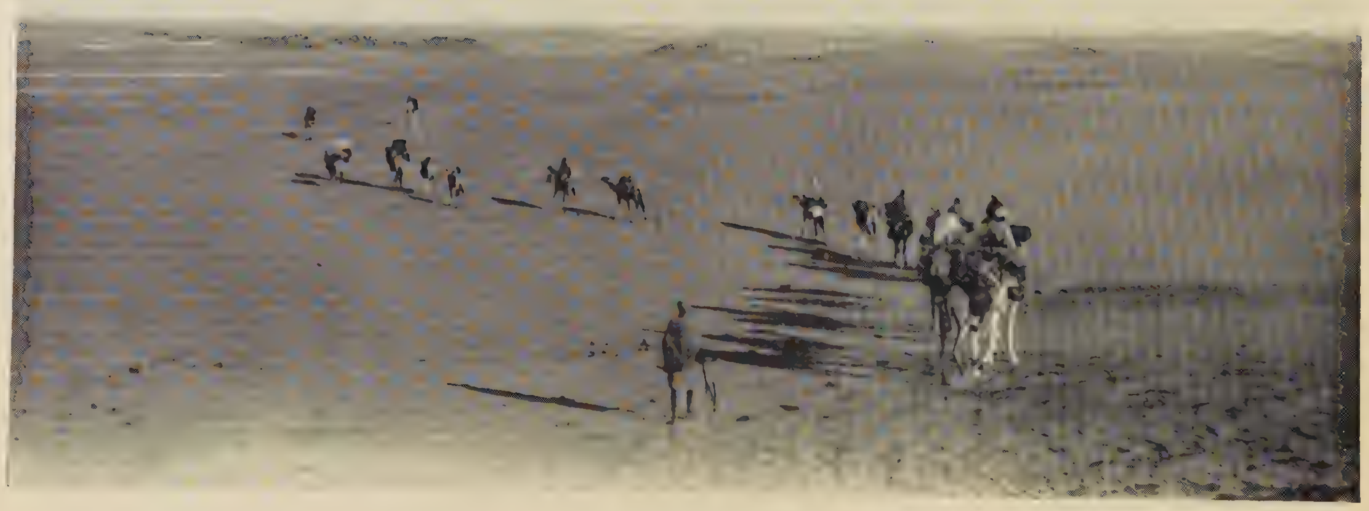
ROCK-PICTURES AT ZOLAT EL HAMMAD
Ph. W. B. K. Shaw

PLATE IV

BAGS LOADED WITH ROCK-SALT AT BIR NATRUN

Ph. W. B. K. Shaw

PLATE V

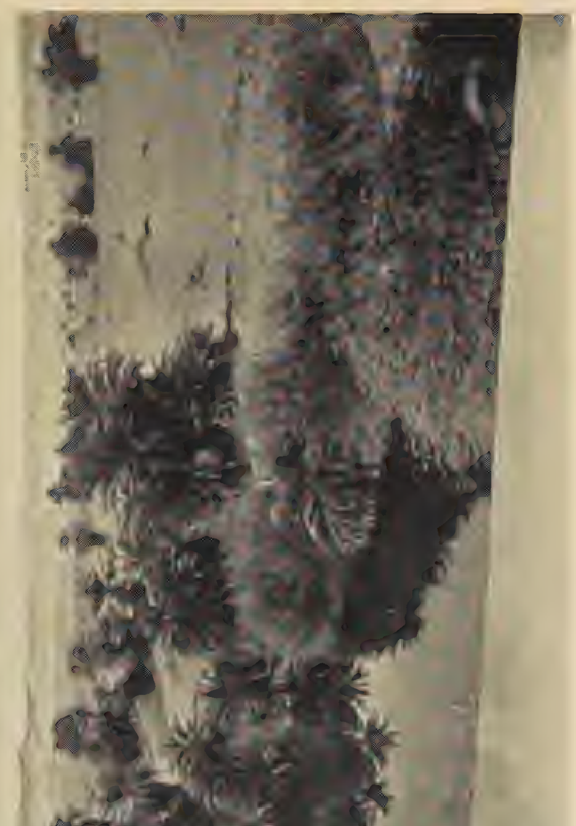


PART OF OUR CARAVAN ENTERING NUKHEILA DEPRESSION, NOVEMBER 1927

(Note the survey-wheel behind)

Ph. W. B. K. Shaw

PLATE VI

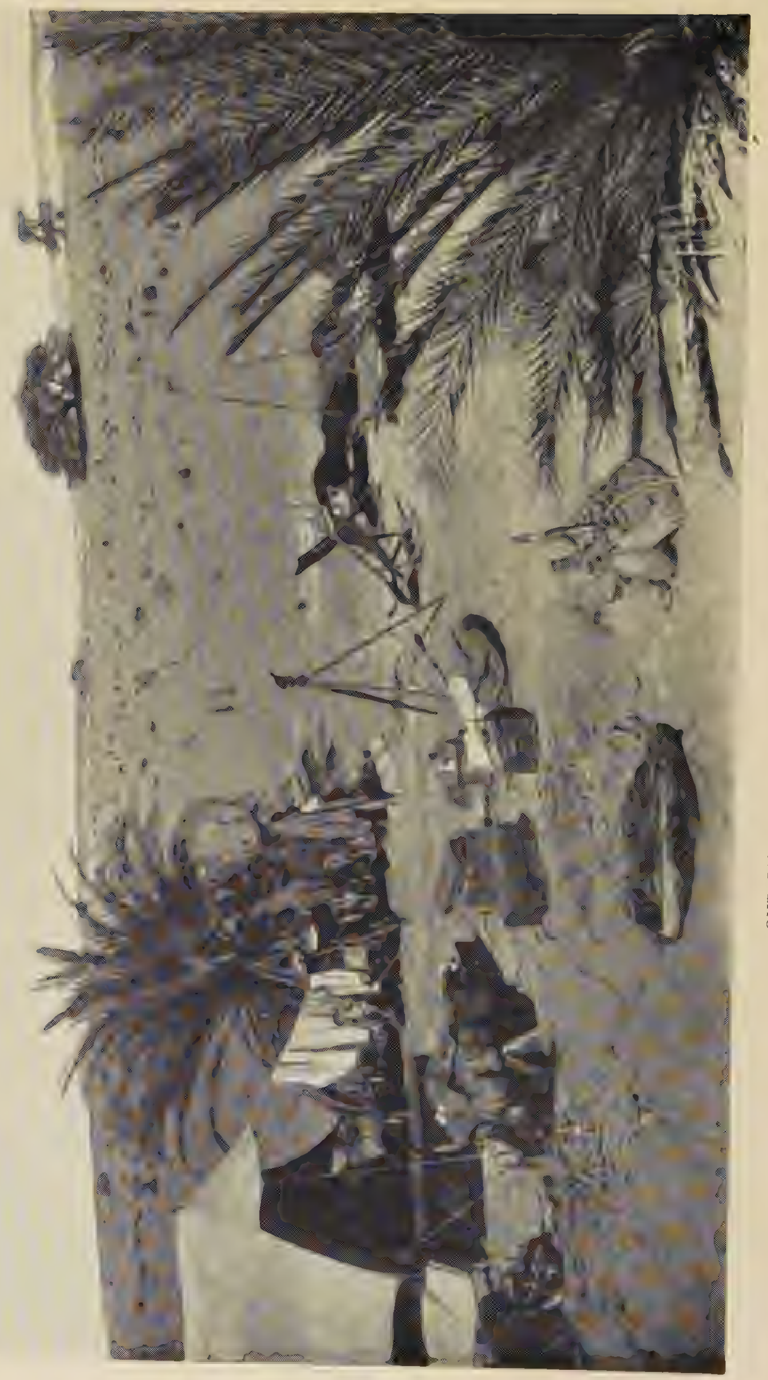


THE SALT LAKE AT NUKHEILA OASIS

(Object in foreground is a sand-dune)

Ph. W. B. K. Shaw

PLATE VII



OUR CAMP AT NUKHEILA OASIS, NOVEMBER [illegible]

Ph. W. B. K. Shaw

PLATE VIII

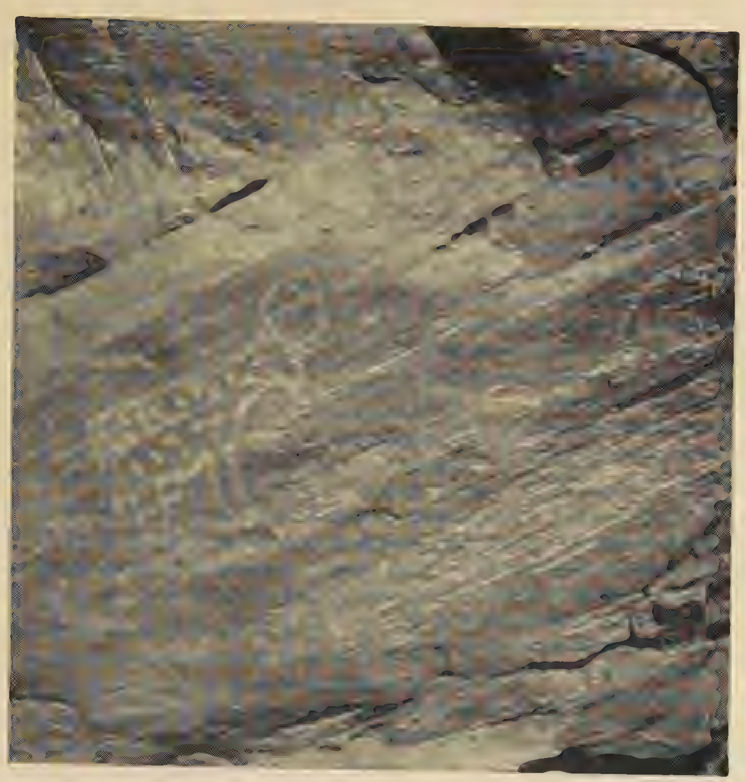


Fig. 1. ROCK-PICTURE AT BURG EL TIYUR

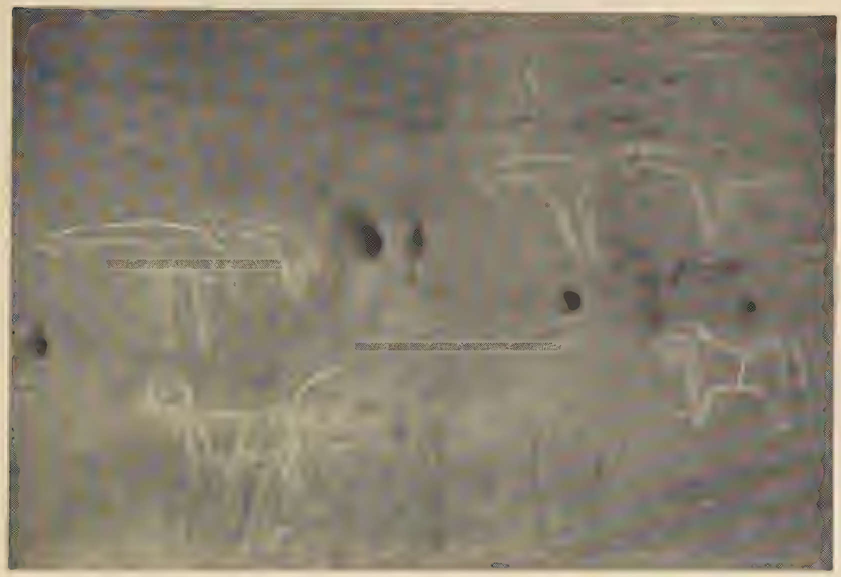


Fig. 2. ROCK-PICTURES AT TAMAR EL GUSAR

Ph. W B K. Shaw

PLATE IX

THE DARB EL ARBAIN, OR FORTY DAYS' ROAD, NORTH OF SELIMA OASIS

Ph. W. B. K. Shaw

will be sufficient at present to classify the Libyan Desert rock-pictures into four rough groups :—

(*a*) Bushman ; late palaeolithic or early neolithic.
(*b*) Early Libyan, neolithic, pre-dynastic, Old Empire.
(*c*) Middle Libyan ; Middle and Late Empire, down to the introduction of the camel into the Sudan, *i.e.* early Meroitic period.
(*d*) Roman, medieval, and modern.

Owenat would be partly (*a*), mainly (*b*) and (*c*) ; Nukheila, Zolat el Hammad, and Um Tasawir (*b*) and (*c*) ; Qalaat el Wish and Abu Sofian mainly (*d*). The Haraza pictures would be—Shalashi (*b*), Karshul (*c*) and (*d*) and Kurkeila (*d*). Um Afarit probably (*c*). But these Kordofan groups are at present rather difficult to date.

For the period of (*a*) we have naturally no written records. For (*b*) and (*c*) we have the references to Libyans in the Egyptian monuments. For the latter half of (*c*) we have the evidence of Greek and Roman geographers and a few vague allusions in native ‘ Histories ’. For (*d*) we have a mass of data from the same authorities and from the Arabian geographers. Some of these data were given at the beginning of this paper.

It only remains to summarize briefly the evidence of finds of stone implements, etc. Apart from those which Shaw and I discovered and which are described above, implements have been found in the Libyan Desert on the following sites :—

(*a*) At Owenat, none so far, but I feel convinced that a thorough search on the floors and banks of the several ‘ karkurs ’ would reveal some. It would be of great value to establish the provenance of the axeheads, which we can trace from the Wadi Hawa to Nukheila, but not beyond.

(*b*) Abu Ballas, a large number of worked flints.[19]

(*c*) At various points in the open desert between Terfawi and Owenat, flint and quartzite implements.

(*d*) At the NE corner of Erdi (lat. 19° 34′, long. 23° 38′); arrowheads, grindstones, pottery, ostrich egg-shells, and grindstones.

(*e*) About 50 miles west of Nukheila, a grindstone.

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[19] A paper on these and other stone implements, which Prince Kemal el Din found, was read by Père Bouvier de la Pierre early this year before the Institut d'Egypte, but it will not be published till November.

These discoveries all resulted from the motor expeditions of Prince Kemal el Din and Dr Ball, mainly in 1925.

(*f*) Hatiyet el Etheila, NE of Kufara. Ancient sites found by Hassanein Bey and Mrs Forbes in 1921, but no relics.

(*g*) 'Allemkuis' between Dakhla and Regenfeld. Flint flakes 'like the stone knives of Heluan', picked up by Zittel on the Rohlfs expedition of 1874.

In his paper on 'Problems of the Libyan Desert',[20] Dr Ball writes :—

'I have been much struck by the wide distribution of stone implements in the desert. I have found them for instance, not only in Siwa Oasis and near the wells of Abu Mungar and Shebb, but also on the plateau between Baharia and Farafra, on the open desert between Terfawi and Owenat, and to the southwest of Owenat near the Anglo-French border. This wide range of occurrence . . . inclines me to think that there is scarcely any part of the Libyan Desert in which stone implements might not be found by an expedition which would make the collection and study of them one of its main objects . . . Grinding-stones, often with a sort of stone rolling-pin, unpolished celts, knives and arrowheads are the principal forms of implements I have met with'.

It only needs, I think, the discovery of a few fresh sites, especially in Tibesti and Kufara[21] and a more thorough examination of existing sites, especially Owenat, before we can piece together the 'Leucoaethiopian' mosaic with fair accuracy, and unravel the ethnography of the great desert belt between the Mediterranean littoral and central Africa. We know already the broad outlines of the ancient Libyan migrations and we can guess at a good deal of the chronology. But there are still gaps, geographical as well as archaeological, in our knowledge. The Libyan Desert still has secrets to yield up to the explorer. Three areas especially are virgin ground.

Firstly, the vast tracts of unknown country west and south-west of Kufara. Here lie the northern foothills of Tibesti, the oasis of Wau el Namus[22] and Wau el Harir, the latter only discovered by Arabs in 1860,[23] the wells of Guerenda, and the Wadi Ko'ur, all four places unexplored by Europeans and forming likely stepping-stones in ancient times between the Fezzan and Owenat, Nukheila, etc. Here ranged the Garamantes.

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[20] *G. J.* Sept. 1927, p. 220.

[21] Especially in Taiserbo, which was probably more anciently inhabited than the other oasis.

[22] Native information reports here palms, a salt lake, and broken sherds.

[23] Rodd, *People of the Veil*, p. 336, quoting Minutoli's *Tripolitania*.

Secondly, the triangle Terfawi–Owenat–Nukheila, of which the sides have been traversed, but the centre remains a blank[24] on the map. An expedition from Selima to Owenat would cut right across this area and lay, once and for all, the ghost of Zerzura.

Thirdly, the unknown country, reputed to be a sea of dunes,[25] directly south of Siwa, and lying between Hassanein's 1921 Zieghen-Jarabub route and Rohlfs' 1874 Regenfeld–Siwa route. Several oases are reported in this area, and possibly the corpses of Cambyses' lost army lie under the drift sand.

When these huge stretches of desert have been explored, a true archaeological and ethnographical map could probably be made, by the aid of which we could see clearly far back to the dawn of Libyan history, past the legends of Idrisi and Herodotus, past the captured Tehenu of the Egyptian monuments, past even the neolithic flints and painted elephants and giraffes, to the mists of the Old Stone Age, when the Libyans first came to Africa, 'a period', says Ibn Khaldun, 'so remote that God alone knows the epoch of it'.

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[24] H. J. L. Beadnell of the Egyptian Survey is, Dr. Ball tells me, digging a well in long. 28°, lat. 22° 14′.

[25] A frontier district administration patrol has penetrated to a point at lat. 27° 45′, long. 25° 45′. At lat. 28° 48′, long. 25° 39′ traces of an old caravan route from Kufara to Siwa were found.

In March 1792, W. G. Browne, who later traversed the whole length of the Darb el Arbain, found a well about 40 miles WSW of Siwa, when looking for some reported ruins.

Climate and Migrations

by J. C. Curry

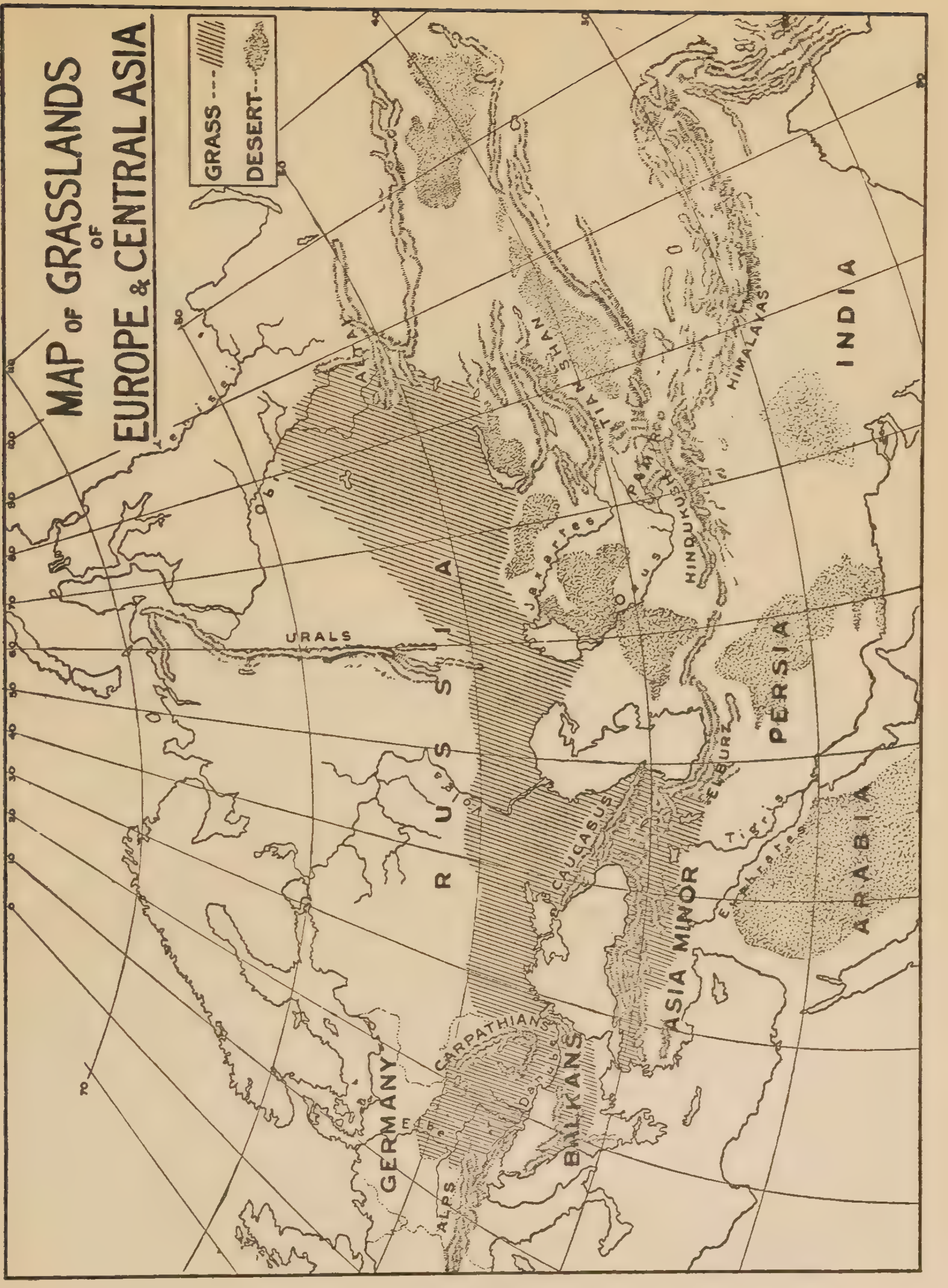
> In separate favoured regions various kinds of men set out to domesticate and master the gifts and forces around them: to 'live well', in the old Greek phrase, under the given conditions of their home, or failing this, to seek and make a new one: in either event, to comply as well as to command; to conquer Nature by observance of her laws.
>
> J. L. Myres

IN this wonderful century when discoveries and inventions have followed fast on one another's heels Man seems to look dazed and half comprehendingly at the works of his own hands. So that there are some who say that he is on the brink of new and more wonderful mastery over Nature; others that there are no more discoveries to make; and others again who wish to cry halt, and ask, hopelessly, for ten years' rest from the innovations and disturbances which scientific inquiry is bringing into their world.

For more than five centuries Man's progress has been almost uninterrupted in every direction. During these centuries Nature has been strangely quiet; and Man has ceased to be frightened of 'portents' and 'visitations'. He has taken advantage of this long quiet period to accumulate knowledge, nearly sufficient, perhaps, to enable him to be the 'master of his destiny', when next Nature rouses herself to such a mood as swept the Roman world into utter ruin. Nearly sufficient, perhaps; but there is still much work to be done before compliance with Nature's laws can be wholly intelligent.

It is only possible here to sketch the main outline of the inquiry, concerning Man and his environment, most relevant to this issue. The sole justification for so crude a sketch is the hope of suggesting new points of departure for others.

In 1903 the Carnegie Institute of Washington appointed Mr Ellsworth Huntington to assist Professor Davies of Harvard University in the physiographic work of an expedition into Central Asia. The results of this and of subsequent expeditions were embodied in an


MAP OF GRASSLANDS OF EUROPE & CENTRAL ASIA
GRASS
DESERT
URALS
RUSSIA
ALTAI
TIAN SHAN
PAMIR
HINDUKUSH
HIMALAYAS
INDIA
PERSIA
ELBURZ
ARABIA
Tigris
Euphrates
ASIA MINOR
CAUCASUS
Volga
Jaxartes
Oxus
Ob
Yenisei
CARPATHIANS
Danube
BALKANS
GERMANY
Elbe
ALPS

account published by Mr Huntington in 1907.[1] The great interest of his work lies in his presentment of the evidence concerning the relations between the human race and its physical environment; of that concerning the changes in that environment through changes of climate during historic times; and in his treatment of the subject of the effects of these changes on its history.

Briefly stated his main argument is that there is evidence of the recurrence of changes of climate in Central Asia during historic times, and that some measure of these changes is furnished by the variations in the level of the Caspian Sea. The evidence as to the variations in the climatic conditions of other places in Asia confirms that concerning the variations in the level of the Caspian. He maintains that, while many of the facts might be explained in individual cases by other theories than that of a simultaneous change of climate over a wide area, no other theory explains all the facts. A comparison of physiographic, historical and archaeological data from Russian Turkestan, Chinese Turkestan, Persia, Seistan, Baluchistan and from the area draining into the Caspian Sea shows that all lines of evidence agree in proving that pulsations of climate, corresponding in time and character, have been common to all these countries. The lakes and rivers throughout the whole of this region have waxed and waned simultaneously more than once since the first records of Herodotus. In his time the Caspian stood at a level more than 150 feet higher than it does at the present day. In the time of Alexander it embraced the Sea of Aral, and the Oxus and Jaxartes then entered it. This latter statement is made on the authority of a survey conducted under the orders of Alexander and his generals. To admit the possibility of this it is necessary to suppose that its level was 150 feet higher than it is at present. From the figures given by Strabo (20 A.D.) it is concluded that at that time the level was from 85 to 100 feet higher than now. In his days the trade route from India to Europe led along the banks of the Oxus, and crossed the Caspian to the mouth of the Cyrus river. Four hundred years later the trade route was diverted from the Oxus to Aboskun in the south-east corner of the Sea. About this time the level of the Sea was lower than it is now. Walls were built at Aboskun and at Darbend, on the opposite coast, 'as a bulwark against the migratory Huns'. At the former place the line of the wall can now be traced, below water, at a distance of 18 miles from the shore. At Baku and at other places are ruins of submerged buildings dating either from the 5th or the 12th centuries. There are several strands at varying heights along the southern shores of the Caspian, among the most clearly marked of which are those 600, 250 and 150 feet above the present level.

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[1] *The Pulse of Asia.*

Their weak development shows that, as a rule, the Sea did not stand at any one level for a long time. The state of their preservation shows that they are of very recent origin.

The most significant feature of the climatic curve of the Caspian Sea is that it is applicable to the whole of Western and Central Asia. At a distance of 1000 miles to the east in the Tianshan mountains there are remains of irrigation channels at a level where there is now frost in midsummer and so much moisture that, if agriculture were possible under such conditions, irrigation would be unnecessary. Two thousand miles to the west in Armenia, in the lake of Gyoljuk, the stone houses of a village are standing 20 to 30 feet below its surface. Local records indicate that they were built about 500 A.D.

A survey of six distinct basins, viz., Gyoljuk, the Caspian, the Seistan lakes, Lop Nor, Turfan and Kashmir (the latter being south of the Himalayas), proves that a great change took place in the early centuries of the Christian era.

The only hypothesis which will fit all the facts is that of a change of climate in the direction of greater aridity throughout these regions. Except in Kashmir the change brought disaster. Scores of once prosperous oases were abandoned for lack of water. The inhabitants were driven away in waves of migration to confound the civilized world.

A rainfall of 20 inches a year in Australia has been estimated to make it possible to keep 600 sheep to the square mile. A drop to 13 inches reduces the number to 100 ; and 10 inches is sufficient for only 10 sheep. A gradual decrease of rainfall in the steppes of Asia would naturally lead to migrations of pastoral nomads from the drier regions to those which offered pasturage for their flocks and herds. As the steppes became drier northern and central Europe were, after a long period of blighting cold, becoming warmer and more and more habitable. History records the coming of horde after horde. Nothing could stay them. Rome and Roman civilization fell before them.

Before we can properly estimate the influence of climatic changes upon history, it is necessary to investigate the nature of those changes, both as to duration and origin, as well as to determine the reasons for supposing that climate varies uniformly over wide areas.

Scientists have recognized two chief types of climatic change.

The first is that of the glacial periods ; the second is that of the 36-year cycle discussed by Bruckner, Clough and others. There is good reason to believe that the latter is applicable to the whole surface of the globe. During a cycle there are two extremes, at one of which the climate of continental regions is to a greater extent cool and wet, with a lower barometric pressure and relatively frequent storms for a series of years ; at the other it is comparatively warm and dry, with higher pressure and fewer storms. These phenomena are most pronounced in mid-continental regions, decline towards the coasts, and are sometimes reversed in maritime regions. The extremes of low temperature follow periods of maximum solar activity as indicated by the number of sun spots and the rapidity with which they are formed. The periods of heaviest rainfall follow those of lowest temperature at intervals of a few years. The other extremes are characterized by diminished solar activity followed by higher temperatures and, a little later, by scarcity of rainfall. The cycles have been traced back by Clough to about 300 A.D., but only the data of the last century can be accepted as approximately accurate. During that time, it may be noted, neither the extremes of heat nor of cold have shown any tendency to increase in intensity.

The Bruckner cycles appear to differ from those of the glacial periods only in degree and regularity. The effects upon glaciers, rivers and lakes are of precisely the same nature ; and the distribution of the two appears to be identical so far as the continents are concerned. Both are world-wide phenomena. The changes of climate which have been discussed above as found by Huntington to have taken place in Central Asia are, he claims, similar in nature to both the Bruckner and the glacial cycles, and lie between them in intensity. In his opinion it is reasonable to suppose that the three types of climatic change are of the same nature, are of the same solar origin, and are of equally wide distribution. This may be true, but he does not adduce sufficient evidence to justify the acceptance of these hypotheses, either as regards the nature or origin of his third type.

From the above précis of the work of Ellsworth Huntington it will be clear that an examination of historical, and perhaps pre-historical, data should yield further results.

Professor Myres, Wykeham Professor of Ancient History at Oxford, in an authoritative sketch of the dawn of History* remarks :

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* *The Dawn of History.* Home University Library (Butterworth, reprint 1927), p. 104.

‘The Arabian desert is one of the earth’s great reservoirs of men. Much of it, indeed, is usually uninhabitable; but its surface, gently sloping eastward till it dips into the Persian Gulf, is much more diversified than the Libyan desert by hollows which are moist enough for grass . . . When the supply of moisture is at its maximum, Arabia can therefore breed and support vast masses of pastoral folk, each with its wealth of sheep and goats, its rigid patriarchal society, its ill-defined orbit within which it claims first bite of the grass and first draught from the wells, which it believes its forefathers opened. But if moisture fails, as there seems reason to believe that it does from time to time, in large pulsations of climatic change, man and his flocks must either escape or perish. Fortunately, escape is easy; the tribes are always on the move; and the drought spreads but gradually’.

In connexion with the distribution of the Indo-European languages he says (p. 195):—

‘Their wide geographical range, from our own islands to Northern India, and from South Persia to Norway, is nevertheless limited enough to suggest that the whole group stands in somewhat the same relation to the northern grassland, as the Semitic languages to that of Arabia. Though the Indo-European languages differ far more widely from one another than even the most distinct among the Semitic group, they all possess a recognizable type of grammatical structure, and a small stock of words common to them all, for the numerals, family relationships, parts of the body, certain animals and plants . . . It is still generally believed, in spite of much discouraging experience in detail, that from this primitive vocabulary it is possible to discover something of the conditions of life in regions where a common ancestor of all these languages was spoken: and when we find it generally admitted:—(1) that the domestic animals of this “ Indo-European home ” included the horse, cow, and pig, as well as sheep, goat and dog, and that the cow was the most honoured of all; (2) that these societies, though mainly pastoral, were not nomad, but had homes and some agriculture; that they used both plough and cart, had a considerable list of names for trees, and some experience of the simplest forms of trade; (3) that the social structure was patriarchal, and that the patriarchal households lived in large loosely federated groups under elected chiefs;—we are probably not far wrong in regarding the first users of this type of speech as having inhabited some part, perhaps many contiguous parts, of the parkland country which fringes these steppes, and as having spread in a long period of slow development; accelerated from time to time by drought, and migrations caused by drought. Some drifted in moister periods in the direction of the treeless steppe, losing or confusing their vocabulary for forestry and farming; others, in dry spells, further into the forests, with corresponding forgetfulness of their more pastoral habits. Much recent controversy over details would have been avoided if it had been realized earlier by students of these languages that the geographical régime of all grassland regions is liable to these periodic changes; and that the immediate effect of such change is either to alter the mode of life of the inhabitants till it suits their new surroundings, or else to drive them out into regions where they still can live in the ancestral way'.

Professor Myres describes the grassland area to which he refers as consisting of two great reservoirs in hour-glass form, fringed by forest or desert, one extending for 1500 miles from the Carpathians to Orenburg, the other for 1000 miles from that point to the high ground of Elburz or of Tianshan. In northern and central Europe where the rainfall is distributed fairly evenly throughout the year grassland gives place to scrubland, and the latter passes into that deciduous forest which once reached without intermission from the Atlantic to beyond the Urals.

Ellsworth Huntington and Professor Myres have thus traced the connexion between changes of climate and certain historical events. The propositions which they have established suggest a detailed analysis of the material dealing with historical events of this type. This analysis yields the following results:—

In the centuries immediately preceding the year 2000 B.C. the first great movement of the steppe peoples foreshadowed the modern world. The Canaanites poured out of Arabia, and the Hyksos, the Shepherd Kings, crossed the mountain ranges through Persia and Palestine into Egypt.[2] The Hyksos brought the horse. It was previously unknown in Arabia and in Egypt. At this time Egypt, the Aegean, Mesopotamia and southern Arabia were the centres of civilization.

Tartar nomads must have inhabited the steppes of Europe and Asia, and early users of the 'Indo-European' speech the surrounding forest and parklands of the two continents. The Alpine race occupied the mountain-zone from the Western Alps to the Pamirs; and the Mediterranean race, described by Professor Sergi, the shores of that sea. The Caspian Sea and all the lakes and marshes of Europe and Asia were larger than they are now, glaciers were more numerous and extended further into the valleys. The rainfall was generally heavier, and regions now steppe were then forest-clad, while some tracts which are now desert provided good pasturage.

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[2] The so-called Median Wall (from the Euphrates to the Tigris) was probably built at this period. Prof. Myres states that it is certainly older than the Median conquest, and that its object clearly was to keep out nomads.

The next great movement was one of agricultural as well as of nomadic peoples. Between 1600 and 1300 B.C. the Aramaean nomads from Arabia entered Mesopotamia, the Indo-European agriculturalists entered India and Persia, Indo-Europeans for the first time came into contact with Syria (witness the Tel-el-Amarna correspondence), the Hittites entered Asia Minor, the Achaeans settled in Greece. During this period and actually between 1400 and 1350 B.C., Minoan civilization suffered a devastating blow. It may be suggested that the Iron Age began in the Mediterranean somewhere about the 15th and 14th centuries B.C. It was probably introduced as a result of migrations from Europe north of the mountain-zone.

A third important period of migration is dated between 1000 and 600 B.C. During these centuries the Celtic movements are traceable along the north of the mountain ranges from the Italian Alps to the shores of the Caspian. The Cimmerian section disturbed by pressure from the Scythians crossed into Asia Minor by Darbend. They or other migratory tribes were responsible for the disappearance of the Hittite state which had been a leading power for several centuries. The Dorians pressed into Greece and caused nearly three centuries of chaos there. The Medes overran Persia.

Shortly after 200 B.C. a fourth period of disturbance and migration began, when a tribe of nomads (probably Turki by race) known to the Chinese as the Hiung-nu, defeated the Yueh-chi who occupied the province of Kan-suh. The Yueh-chi in turn attacked and dispossessed the Saka, or Scythians, who then occupied the steppes north of the Jaxartes. The Yueh-chi began to settle in Bactria about 70 B.C., and the Saka passed on into India and settled in the Punjab, Kathiawar, and Gujerat. At the same time Persia was overrun by nomadic Turanians. Towards the end of the second century B.C. Germanic hordes threatened Gaul and Italy. Their advance was only stemmed, after special exertions, by the organized might of the Roman arms.

A fifth period, involving a most serious check to the growth of civilization south of the mountain zone, falls between 250 and 650 A.D.

About 250 A.D. a series of catastrophes occurred in India, Greece, and Italy. The Kushan kingdoms in northern India and the Andhra dynasty in the south of the Peninsula were extinguished as the result of barbarian migrations. Simultaneously the Goths pressed into Greece and took Athens by storm. Their inroads continued in spite of a crushing defeat in 269 A.D.

All along its frontiers the Roman Empire was hard-pressed during the latter half of the third century. Franks and Alemanni roamed through Gaul, Saxons plundered the coasts. A hundred years later a stream of Huns, separating from that which filled the valley of the Oxus and later overflowed into Persia and India, poured into eastern Europe (about 375 A.D.) driving the Goths to the south of the Danube and displacing the tribes in Germany. The Roman Empire was divided in 395 A.D. The Goths were settled in Moesia about 390 A.D. The Western Empire succumbed to the Germans, who after inundating Gaul, Britain, Spain and the North African Province seized the imperial diadem in 476 A.D. The Hunnish Empire in Europe was broken up about 460 A.D. by fresh swarms of immigrants from Asia.

Almost in the same year the Huns poured into India and overwhelmed the kingdoms of the North. About 456 A.D. the Sassanian dynasty of Persia built the walls at Darbend and at Aboskun (mentioned already as now being below the level of the Caspian) as a defence against the nomads. They were able by this means to avoid their fate for a time, but by 484 A.D. all resistance had ceased.

The sixth and last period is that of the 11th, 12th and 13th centuries, in the first of which the ‘ wild Magyar horsemen ’ were restless in Europe. During the 13th century swarm after swarm of Mongols poured into Europe and into India.

The dates marking the duration of the fourth, fifth and sixth of these periods are matters of exact historical record. Those of the first, second and third are fixed less finally by historical evidence, by tradition, and as a result of archaeological investigation in both continents and in Egypt and the Aegean. Each period lasted from about three to nearly four centuries ; and the intervening periods were of a similar duration. During the intervening periods civilized and organized states were developed in some or all of the regions south of the mountain zone.

Between the first and second migratory periods the Theban dynasties reorganized Egypt and founded the ‘New Empire’. Minoan civilization dominated the Aegean. The Canaanites settled down in prosperous communities in Palestine and Syria, and the Assyrian power grew steadily in Mesopotamia.

Between the second and third periods the Aryans developed the Vedic civilization of India, the Hittite state grew up in Asia Minor. Egypt, Judea and Mesopotamia were all prosperous. This was the Achaean age of Homer.

After the third migratory period civilization burst suddenly into full flower along the southern slopes of the mountain chain, in India, in Persia, in Asia Minor, in Greece, and in Italy. In each case it occurred after a fusion of the 'Aryan', or 'Indo-European', races with the earlier inhabitants and in a climate suitable to agriculture and to a 'high stage of development of the Indo-European'.

After the fourth migratory period India, Persia and Greece suffered a relative decline, and Italy was pre-eminently the centre of civilization. The countries north of the mountain zone were beginning to develop under Roman influence.

After the fifth, most disastrous period, modern Europe begins to emerge from the chaos of the Dark Ages. After the sixth and last irruption from the steppes the Renaissance ushers in the present age.

Taking the periods after 600 B.C. as being more precisely dated, it is clear that each complete climatic cycle had an average duration of approximately 640 years. The years 1170 A.D., 530 A.D., and 100 B.C. indicate the crests of the waves of migration and drought. Proceeding further back, if the same figure held good the next three crests would be represented by the years 750 B.C., 1390 B.C., and 2030 B.C.; and these dates accord with the general estimate of the duration of the first three migratory periods as indicated in previous paragraphs. It may therefore be inferred for the present that these dates provide a measuring rod for the history of the 2500 years preceding our era. An attempt has been made to represent the historical movements in graph D on page 302.

NOTE ON GRAPH, PAGE 302.

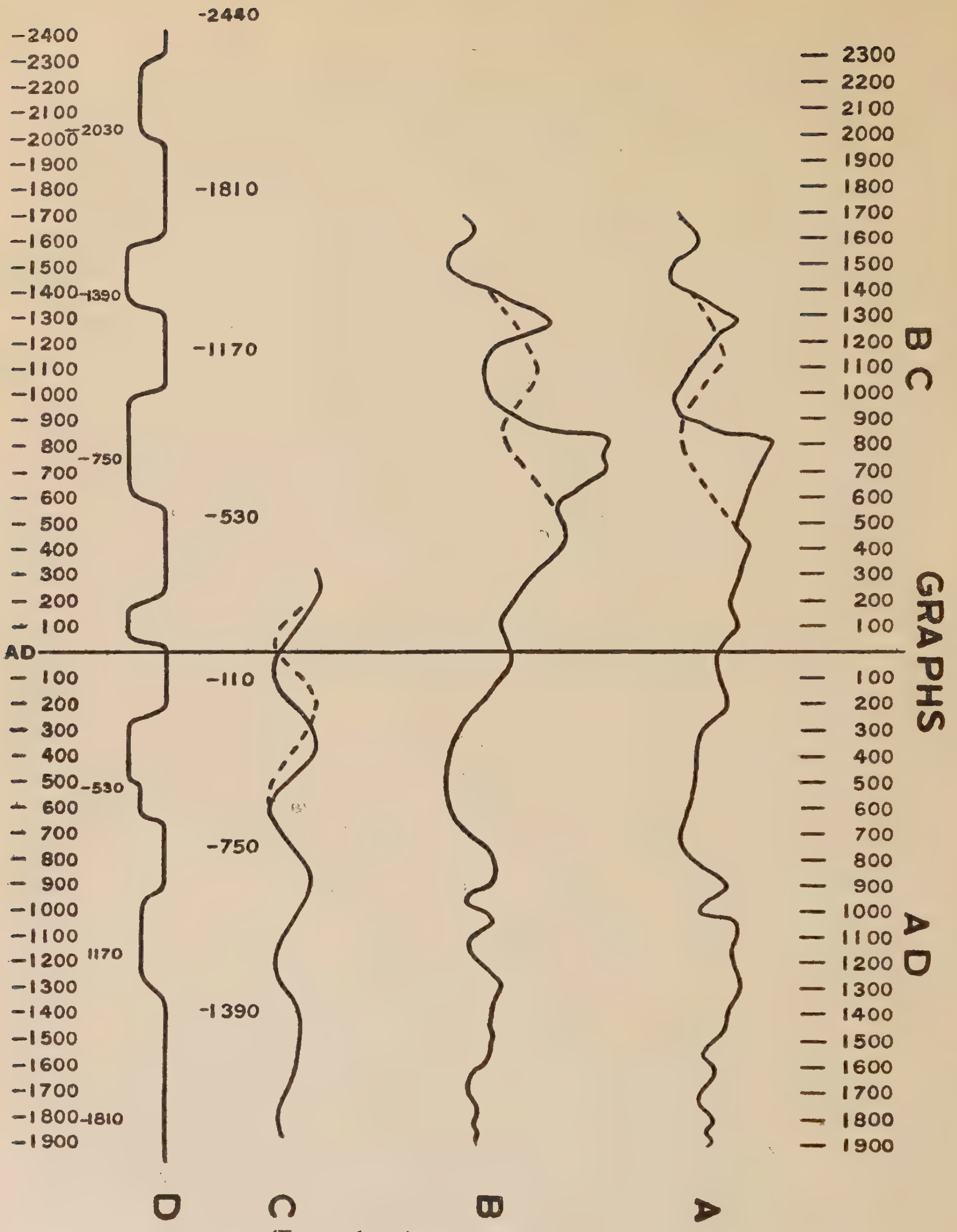
A.—From Brooks' 'Eurasia', fig. 38 in *Climate through the Ages*.

B.—From Brooks' 'Western Asia', fig. 35 in *Climate through the Ages*.
(A and B by permission of the Author and Messrs Ernest Benn Ltd.).

C.—Pearson's graph from the *Geological Magazine*, 1901.

D.—Graph representing historical fluctuations. The 'crest' line represents periods of stability and settlement, and the 'trough' line periods of disturbance and migration.

In A, B, and C the dotted lines are inserted to indicate the divergence of Brooks' and Pearson's graphs from the 640 year cycles.



(For explanation *see* footnote, page 301)

An analysis of physiographic and of historical data leads then to the following conclusions:

(1) A regular succession of climatic cycles approximately 640 years in duration, each including on the average something like 300 years of increasing aridity, has produced a series of alternating periods of migration and consolidation in Europe and Asia, where the effects can be traced between the years 2300 B.C. and 1600 A.D.

(2) These periods of migration have also been periods of internal decay in civilized states and among settled communities. This would, *a priori*, be expected to result from unsettled and particularly deteriorating conditions of climate causing deterioration in the agricultural and commercial conditions under which the people of such communities lived.

It may be deduced that the periods of consolidation would necessarily be such that conditions were relatively 'settled' in every respect; that is to say, when at the most very slight variations of climate occurred.

(3) Physiographic conditions generally (of the graph and other evidence relating to the levels of the Caspian Sea) prove that, taking the period of the last 7000 years as a whole, there has been a large-scale but very gradual tendency towards desiccation.

From this it may be inferred that the 300-year periods of migration have been of such a nature that this general primary tendency has been accelerated by secondary conditions, and that the 300-year periods of consolidation have been of such a nature that the corresponding secondary conditions have served more or less closely to counteract this general tendency.

This general tendency is reflected in history by a tendency for the centres of civilization to move gradually away from the equator. Prior to 1000 B.C. conditions were most favourable to physical and intellectual well-being in the region of the 30th degree of latitude (Egypt and Babylonia); from 600 to 300 B.C. between the 35th and 40th degrees (Greece); from 300 B.C. to 400 A.D. between the 40th and 45th degrees (Rome); from 800 to 1000 A.D. between the 45th and 50th degrees (France and Northern Italy); and finally after 1000 A.D. between the 50th and 55th degrees (England, Northern France and Germany). After 400 A.D. no clearly defined distinction can be made. Italy, Spain, France, England and Germany can all claim to have been pre-eminent in different ways at different times: but the general tendency for the best conditions to move northwards is undeniable.

The year 1840 should have marked a wave-crest of migration, of desiccation, and of a low level of the Caspian Sea. A marked drop in this level did occur about 1820, but it was evidently not connected with any cause sufficient to bring about disaster in the steppes or a very serious economic upheaval. From the generally 'settled' conditions of the last 200 years it follows that either the primary or the secondary cause of desiccation, or both, have ceased to exercise their former influence.

Following Huntington's conclusion that the changes which now appear as 640-year cycles lie mid-way between Bruckner's and the glacial cycles in intensity, the causes of change referred to above as primary must be regarded as being connected with the last glacial cycle.[3]

The geographical and historical evidence in favour of the existence of a 640-year cycle is inconclusive and incomplete in the absence of any explanation of its cause or causes. The alternating periods of migration and consolidation are, however, so clearly marked that their existence can hardly be a matter of controversy, apart from the question of periodicity. The connexion between droughts and migrations has been recently discussed both by H. Peake and C. E. P. Brooks. Their work shows that there is need for the treatment in greater detail of the historical evidence, both as regards the migrations of the steppe peoples and deterioration in the more highly organized states.

The fact that conditions have been so settled for nearly 600 years, (since the migrations of the Mongol period), has led to these questions being regarded as of academic or even merely 'bookish' interest. It is however possible that changes may occur again on a scale similar to those which destroyed the civilizations of the past. Some such change as that which brought new peoples into Italy, Greece, Asia Minor, Mesopotamia, Persia and India between 1600 B.C. and 1300 B.C. might again take place suddenly and transform the world in the lifetime of our own or the next generation. Such considerations indicate that these questions, being, at least, of potential importance in high politics, deserve greater attention than they have received. If Man is to be master of his destiny, to 'live well', and 'to conquer Nature by observance of her laws', these are the secrets which he has now to learn.

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[3] Other evidence bearing on the nature of these primary and secondary causes of change is, possibly, to be found in such facts as that the level of the Caspian was much lower during the fifth drought than it is now: that this drought, judging by the historical evidence, appears to present a triple wave crest: that the fourth and sixth droughts had much less serious effects than the third and fifth: and that the effects of the later droughts were comparatively unimportant in Arabia.

The problem at this moment seems to offer two main lines of attack—to find the causes of the alternate (300-year) periods of migration and consolidation, and to determine the chronology and causes of the glacial periods. Both solutions are for the present veiled in obscurity.

The conclusions so far reached suggest an examination of all phenomena likely to be related throughout the whole field of scientific inquiry, and primarily in those branches of knowledge classified as geology and meteorology.

In the sciences concerned with the study of past events, in geology, palaeo-climatology and archaeology, as in history, a clear arrangement of the facts is impossible without a standard for the measurement of time. The need for such a standard has long been felt by geologists. Nearly a century ago they sought the aid of the astronomers in an attempt to give definition to geological time. No solution has been found on those lines. In *Climate through the Ages* Brooks elucidates many of the phenomena connected with the great glaciations, but he shows that questions of chronology are still in doubt. One possible factor in the equation, which is still unknown in spite of observations dating from Ptolemy's time, is the variation in the obliquity of the ecliptic. If more were known about the periods, extent and nature of this variation, and its exact relation, if any, to changes of climate, we should be nearer a solution of the questions connected with the passing of the last glaciation, and the progress from palaeolithic to neolithic civilization which accompanied it. Assuming that the 'primary tendency' for civilization to move away from the equator is connected with the glacial cycle, we should be nearer to understanding whether and when the centres of civilization are likely to pass south again.

Similarly it is tempting to hope that the inference of a 640-year cycle may be supplemented by evidence as to its origin. If it were established, it would facilitate the study of future, as well as of archaeological, problems.

Whether this inference of a regular periodicity is true or not, the fact of the occurrence of long periods of drought and disturbance on the one hand, and of climatically and economically 'settled' conditions on the other is susceptible of scientific explanation. The problem will be solved eventually, if only because a knowledge of all the factors will make it possible to foresee and provide for future catastrophes.

The main factors as known at present appear to be variations in the position and intensity of the north temperate storm belt and in the direction taken by depressions as they move eastwards across Europe and Asia. According to Brooks it has been found that the area in which annual rainfall variations have a positive correlation extends only a short distance north and south, but for many hundreds of miles across Europe into Asia. This is the area whose rainfall influences the migrations from the Steppes. Ellsworth Huntington has partially established correlation with other parts of the world, but the evidence in that respect is not yet complete. In view of recent work proving, among other things, relations between variations in the Indian monsoon and rainfall in Africa and South America, it seems probable that factors sufficiently powerful to cause the great droughts on the Steppes could not but be world-wide in their effects. Huntington has suggested a gradual northward movement of the storm belt corresponding with, and connected with, the movement of civilization in the same direction.

H. W. Pearson, in the *Geological Magazine*, 1901, suggested that the evidence of the raised beaches proved the existence of a regular cycle of oscillations of sea level. He considered that this cycle had had a period of 640 years in recent times, and one of 500 years about the time of the Christian era. He appears to have connected these oscillations,—perhaps as a guess, for he gives no reasons—with the swing of the magnetic needle. If his theory is correct it would appear to involve the synchronization of increasing glaciation at the poles with scanty rainfall on the Steppes, and vice versa. The evidence has not been fully examined. The position is thus obscure ; but the time seems ripe for fresh discoveries.

When so many guesses have been made perhaps one more may be permitted. It is generally felt that there is something lacking in the Darwinian view of the origin (and extinction) of species, and that some simple explanation may have been overlooked. Is this not because the problem is considered as if environment were not constantly changing all over the world ? The evidence now under consideration shows that from time to time forest areas become steppe, and steppe areas desert, and vice versa. Where an area of one kind is, as it were, an ‘ island ’ surrounded by areas of other kinds, slight changes of climate may lead to the extinction within that area of a species, and consequently, where the change of climate persists, to the permanent modification of another species which had partially depended on it for subsistence.

Change and response to change provide the setting of the greatest of all dramas, the drama of Man's ascent towards the crisis where, in virtue of his intellect, he seeks to master those natural forces to which he once attributed divinity.

Geochronology

as based on solar radiation, and its relation to archaeology

by GERARD DE GEER

IN the American journal *Science* for 1920 mention was made of my plan for investigating certain laminated clays in North America. During a previous visit to that country in 1891 I had noticed, in several places, laminated clays, similar to late glacial melting sediments in Sweden ; these I had found, by long continued investigations, to represent the annual deposit from the melting water along the border of the retreating ice-edge. (Plate 1)[1]. With the aid of a graphic method for the comparison of the sharply marked annual layers or *varves*, I had succeeded in identifying such *varves* from one point to another, and ultimately worked out a systematic plan for the elaboration of a continuous time-scale. (See page 309). This was mainly carried out in 1905–6 on the basis of field measurements made with the assistance of a number of able young geologists. During the following year this standard scale was completed at many points. I thus succeeded in tracing, step by step, the recession of the ice-edge and the immediately following progress of the clay *varves* over one region after the other, until the whole line from the south to the centre of Sweden had been traced.

As might be expected, the lowest and oldest clay *varves* were found deposited in the southern extremity of the land, while the great ice-sheet covered the whole of the rest. By following the progress of the clay, step by step, the whole series was built up ; thus forming a continuous and exact time-scale for the last recession of the ice through Sweden up to a certain year, when a great ice-dammed lake in central Sweden was drained off, depositing a very thick annual *varve*. This year was chosen as representing the very end of the late Glacial Epoch. (See map on page 311).

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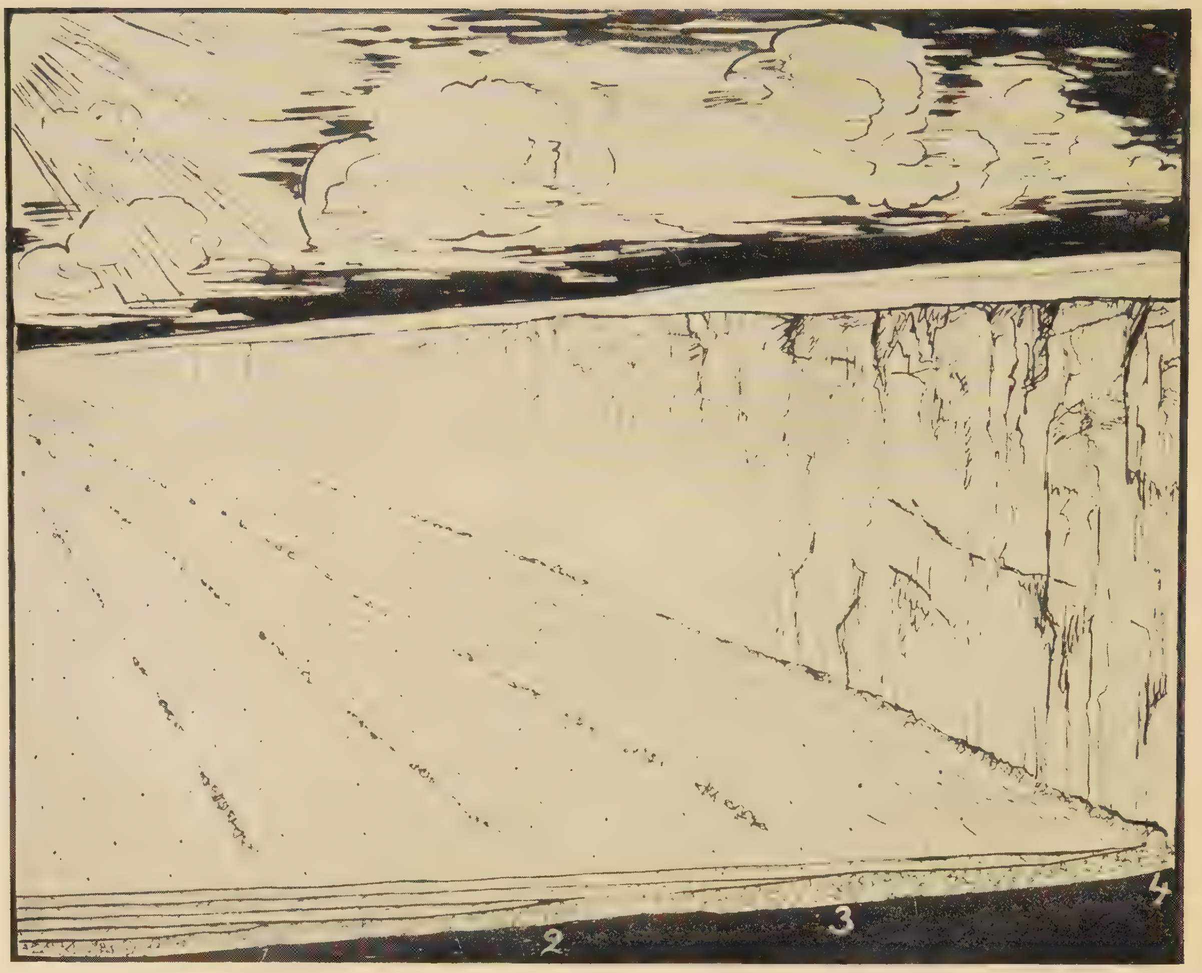
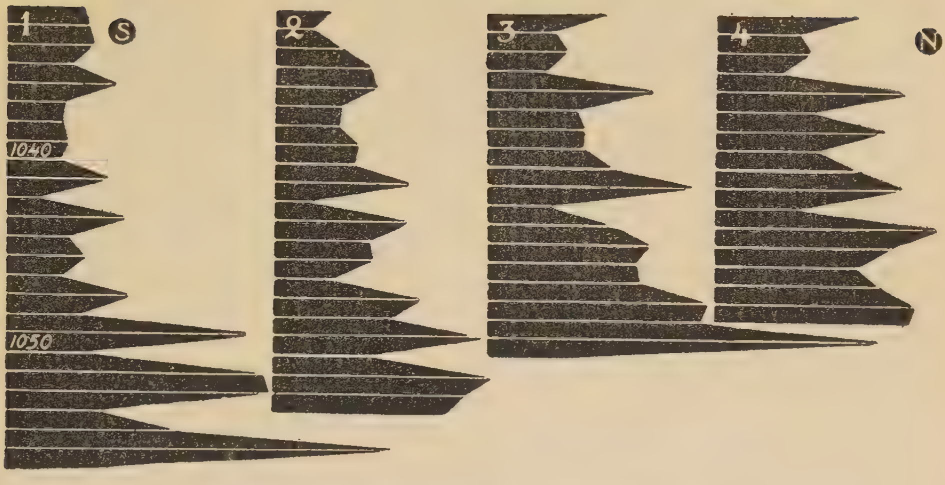
[1] Note on plate illustrating clay registration of ice-recession :—Land-ice with steep ice-cliff down to sea bottom, whereon four annual stages of ice-recession are marked by dotted lines; frontal moraines from small winter-stops in the retreat (1–4). Below :—bottom section through the corresponding four annual clay *varves* encroaching one over the other on the stony moraine bed, as it was left every summer by the receding land-ice.



CLAY REGISTRATION OF ICE-RECESSION

facing p. 308



DIAGRAMS FOR FIXING THE ICE–RECESSION

Four *varve*-sections showing ice-recession at Stockholm from S to N during the years 1056 to 1032 before the end of the Ice Age, *i.e.* about 9,800 years ago.

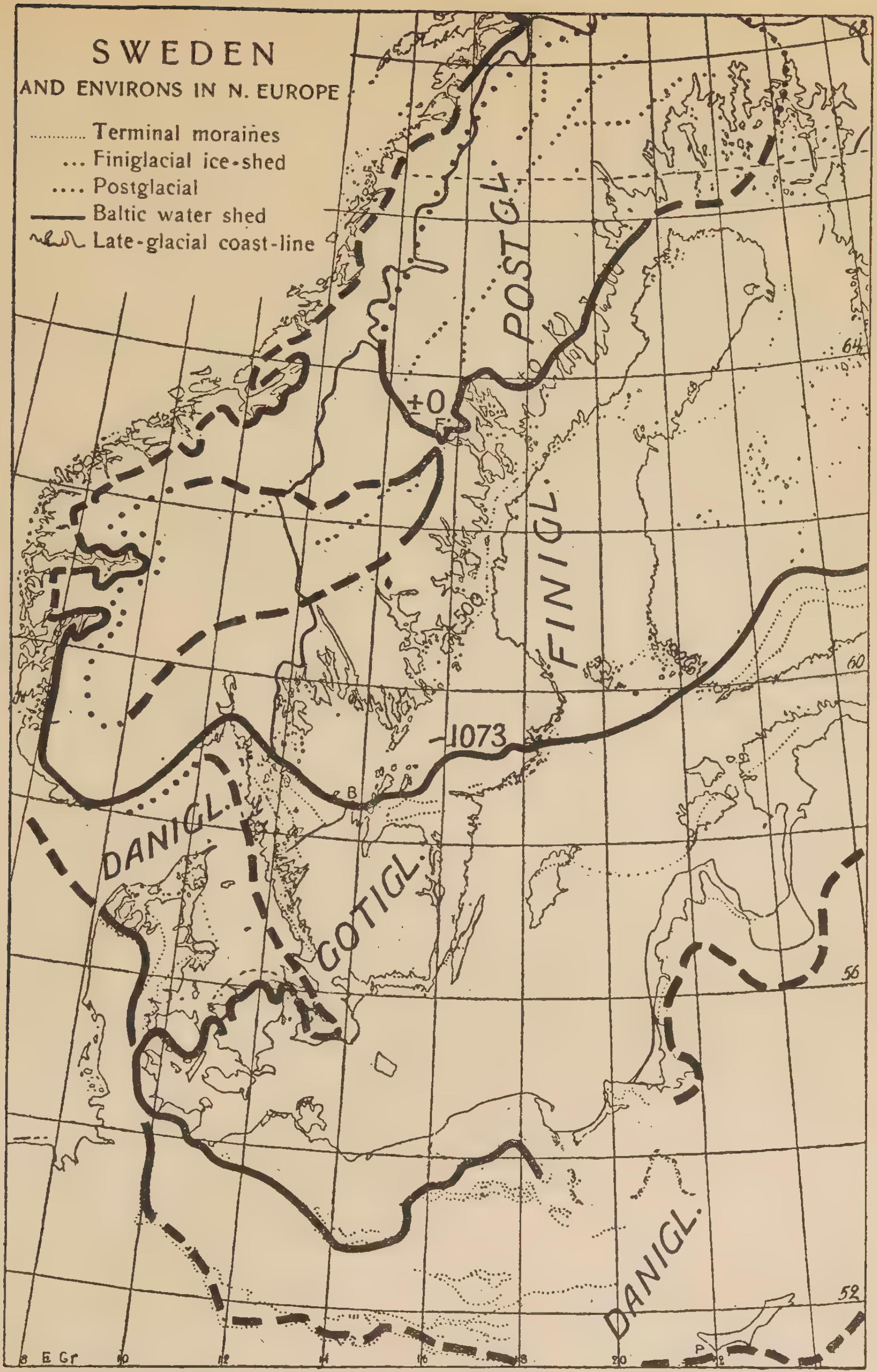
In order to compare *varve* series from different localities and thus to compose a chronological scheme the author introduced in 1884 the following method of constructing *varve* diagrams, ever since used in all publications in Sweden, Finland, Norway, and elsewhere.

The variation in thickness having been shown to be the only practical way for such comparisons, and the differences as to the absolute thickness at different localities hindering very rapid comparison, induced me to arrange lines, representing the thickness of the *varves* measured, not in a continuous, vertical, row, but in a lying position, the lowermost at the bottom and the youngest at the top, drawn from left to right as abscisses from a vertical ordinate with intervals of exactly 0.5 cm (here half distance).

By help of this constant interval the variation in different localities can be compared at a glance. In fact it was this arrangement that made the whole of the chronology possible.

For many years I tried in vain to find some means of determining the length of the succeeding post-Glacial Epoch proper, until one of my most successful assistants, R. Lidén, discovered in the northern part of Sweden annual *varves* for that epoch also. Of these *varves* I measured in one section at the Indal river rather more than 3000, but it was along the Angerman river that Lidén himself, quite independently, succeeded in finding and working out practically the whole of the post-glacial *varve* succession by a careful and painstaking correlation of a long series of sections, giving the total length of the post-Glacial Epoch as about 8,700 years. What made his work especially important is that there seems to be no other place in the world, not even in Sweden, where there is a possibility of finding such a continuous *varve*-series for the whole of the post-Glacial Epoch. By the dating of the lowest *varves* the recession of the ice in Sweden has been determined in detail at more than 1500 points, whilst elsewhere, excepting in Finland and in Canada between Ontario and Quebec, sections have rarely been worked out to the lowest *varve*. Thus, along the Connecticut Valley, according to Antevs' exceedingly interesting and comprehensive measurements, the lowest of the clay layers was so seldom exposed, that the particular stages of ice-recession could be determined only at six points on the whole line. Though it is thus impossible to compute the exact rate of ice-recession in this region, his numerous measurements of long *varve*-series have afforded valuable material for detailed comparison with the time-scale in Sweden, and for satisfactory verification of the thickness variation of the *varves* in some otherwise unverified parts of the Swedish scale.

Since the initiative, organization and method of this investigation are of Swedish origin, and it is apparently only in Sweden that the time-scale can be continued right up to the present day, it seems fair to name this standard line of chronology ‘ the Swedish time-scale ’, even where it is verified and completed by parallel measurements in other countries. The main purpose of an exact international chronology must be the reference of different kinds of events everywhere, to one and the same standard of time. The necessary condition for the introduction of such a time-scale was, of course, the possibility of identifying synchronous *varve* variations even at great distances. This condition seems now to be realized. Thus almost all the *varve*-series measured in 1920 by the Swedish expedition to North America have, with certainty, been identified with corresponding series in the time-scale in Sweden. This was illustrated by examples representing a few thousand



SWEDISH ICE-RECESSION EPOCHS PROPOSED AS BASIS FOR INTERNATIONAL CHRONOLOGY years published (in English) in the *Geografiska Annaler*, Stockholm, 1926. I have also quite recently succeeded in identifying a series of nearly 600 *varves*, carefully measured in Argentina by one of my former pupils, Dr Carl Caldenius. In the same journal was published a description of E. Norin's *varve* measurements in the north-western Himalayas, carried out and identified by him in 1925 and 1926, and also Late Glacial clay-*varves* in Iceland measured in 1919 by H. Wadell and recently correlated with the Swedish time-scale by Ebba Hult De Geer. A continuous series of eight hundred *varves* measured by Dr Caldenius in southern Chile has also been dated by myself and will soon be published by the Geological Survey of Argentina. Among other correlations performed, here it may only be mentioned that the Swedish time-scale has now become extended to the very limit of the Gotiglacial ice-oscillation or to the beginning of the corresponding sub-epoch, giving not quite 8,000 years before the end of the Ice Age and thus considerably less than the 9,500 which were earlier tentatively suggested.

Considering that the distances from Sweden and to these other regions range from 6,000 to 14,000 kilometres, the similarity of more than 80 per cent. of the whole identified *varve*-series is very striking. It is especially noteworthy that this similarity continues for century after century, thus putting it beyond reasonable doubt that only a real identity can explain so considerable a number of similarities.

A close study of the diagrams already published will soon show that the possibility of mere accident must be ruled out. This remarkable coincidence in such rapid variations at such considerable distances, caused by simultaneous melting of ice, seems not to be explicable in any other way than as being due to variations in the amount of heat received from the sun. Thus we have to do with nothing less than a gigantic self-registering thermograph, showing the variations in the radiation from the sun. With respect to the physics of the sun, it is of interest to note that there often exists an observed biennial variation as well as the annual one, which is indicated by the connexion of the *varve* variation of the two hemispheres so that the north and south summers with their closely corresponding *varves* point to a natural thermal year. It is still undetermined in which hemisphere that year begins. For the solution of this question it is of interest that for some years past, observations have been made in Chile, on the solar radiation, for comparison with those executed since twenty years ago on the sunny heights in the far west of the United States. Whatever may be the astronomic cause of the annual solar variation, it seems likely that its beginning and end are probably to be found somewhere between the northern and southern summers, or not far from the equinoxes. When this has been fully established, our annual mean temperature ought to be calculated for the natural thermal year, which should give much more characteristic results than those obtained from the basis of the arbitrary calendar year. Nevertheless, though it be granted that *varve*-variation in its general features is a function of solar radiation, it is at the same time more or less influenced by local factors such as the topography of the ground on which the deposit is made, changes in the direction of the melting rivers, the varying composition of the morainic material from which the clay is washed out, and other circumstances. By parallel measurements in different localities, many such deviations from the true solar curve will probably be eliminated, but meanwhile it is not advisable to transcribe the thickness of the *varves* into figures intended for exact calculations. Already, however, a really convincing graphic correspondence makes it possible for the first time to introduce the time factor into a great number of geophysical investigations which were hitherto beyond our reach. Thus, to mention a few examples, the possibility of mapping and dating synchronous land-ice-borders over great areas in different regions of the earth renders it possible, in connexion with the physics of land-ice, to make a rational study of the movement and extension of ice, and of its recession as a function of melting as well as of fracturing. In the papers quoted some hints are given concerning the use of time determination for a closer geophysical study of other processes, such as the evolution of climate, and the erosion along rivers as well as along the shores of lakes and seas. Special mention is made of the magnificent example of the Niagara Canyon, the age of which has now been geochronologically dated by means of good *varve* connexions. Thanks to the excellent measurements of American and Canadian geologists we have here a first-class example of the amount of river erosion under certain conditions during a determined space of time. There is only room here to mention fresh possibilities of studying the way in which the recession of the ice was followed by the formation of soil and vegetable mould, and the immigration of flora and fauna into the former great ice-deserts.

ARCHAEO-CHRONOLOGY

In the autumn of 1924 I had the welcome opportunity of starting under the auspices of the University, a Geochronological Institute for the preservation, elaboration and extension of material in connexion with the Swedish time-scale and its international use. Up to the present time twelve preliminary papers have been issued from the Institute, and published in various Swedish scientific journals under the common title of *Data*. The first of these, *Data* 1, was published in Swedish and was entitled *Förhistoriska tidsbestämningar*, or Prehistoric Datings. It may be well to summarize here some of the views expressed, as exemplifying the archaeological use of the new time-scale.

The period of man is a late conception in the history of the earth, for the first reliable traces of beings who can be considered deserving of the name of man can hardly be found in deposits earlier than the Quaternary period. These deposits form the comparatively thin soil which covers the older formations with their remarkable remains of plants and animals, which more or less differ from any existing species. Naturally enough, these earlier layers formerly attracted the most attention, and the Quaternary deposits were looked on mainly as a hindrance to the study of the older formations. Geologically speaking, the Quaternary period was a very short one, and the corresponding geological deposits are, in many places, inconsiderable and uninstructive. Moreover they vary considerably from one region to another, both in thickness and material, and no general classification of sub-divisions has hitherto been possible. Now, however, there are special opportunities of gradually establishing a real time-scale for the Quaternary period.

It would seem that the remarkable deterioration of the climate, which caused the glaciation of the Quaternary period and can now be shown to have affected the whole of the earth simultaneously, must have had a great influence upon the ancestral forms of man, and especially so in the regions where it was most severe. This influence may, indeed, have been the immediate cause of that adaptation to more and more exigent natural conditions and the consequent evolution of intelligence, which led to the beginning of the human stage. This was especially true of regions where the supply of edible fruits became insufficient and fishing and hunting became necessary. This led to the development of skill and weapons, whilst the rigours of climate necessitated the use of clothing and sheltered dwellings. One invention led to another, such as the making of boats, the art of pottery, and that important step in human evolution when man took fire into his service. By extensive excavations in many regions, archaeology has now been able to establish the succession in which the various types of tools and weapons follow each other and also which species of animals and plants have been observed together with these finds. In this way, for certain regions, it has been possible to establish so regular a succession of strata as may well justify attempts at correlation within limited areas. With regard to finds from more widely separated regions, however, the risk of error is naturally growing. Primitive types of tools, for instance, are known to have originated independently in different places and epochs and may likewise have been used for varying lengths of time in different regions. Thus, to take a well known example, certain tribes have existed up to the present day with no knowledge of metals, and are still, to all intents, living in a kind of Stone Age.

Attempts have often been made to establish the sequence of those climatic changes which seem to be indicated by the organic remains found in various archaeological strata. At many places, however, the sequence of strata is very incomplete and, as the Quaternary period shows several considerable climatic variations, it is often difficult to decide to which of these isolated prehistoric finds should be attributed. Most Quaternary geologists, however, seem to agree that at least two separate glaciations must be regarded as well established, those known respectively as the Great and the Last Glaciation. Of these the last is incomparably the best known, since it is the only one of which the deposits are accessible for close investigation. The deposits of the Great Glaciation are nowadays preserved almost nowhere but outside the limits of the Last Glaciation. Deposits from the older stages of the glaciations are often concealed or totally destroyed by the later movements of the land-ice. It is not, therefore, surprising that geologists hold very different views with respect to the number as well as the extent of the oscillations of the ice, and also to the question of how many of these may be ranked as independent glaciations. The difficulties in the way of solving this important question are very great, but until they are overcome it is too early to attempt to relate the older cultural epochs of the Palaeolithic Age with the glacial or interglacial stages.

The last receding land-ice has, however, left to posterity a remarkable and complete auto-registration, covering the whole of the melting epoch. There is here no question of relative computation, but the direct reading and counting of the *varves* deposited by the water formed every year, as long as the melting epoch lasted. For the late Quaternary epoch, after the maximum of the Last Glaciation, we have already a very comprehensive series of measurements from a great number of localities, and when the whole has been worked through we shall have an exact time-scale for the period which is by far the most important in the evolution of prehistoric cultures. The next stage is to find some region where sediment accumulated during the whole of the Quaternary epoch, in its glacial as well as post- and inter-glacial stages. These conditions may be found to prevail in several delta regions which received sediment from some greater glaciated area throughout the Quaternary period. Such was the relation of the Ganges-Brahmaputra delta to the eastern Himalaya. It would, however, be impracticable to begin with so immense an area before the method had been tried on a smaller one. The Indus delta would, from every point of view, be more suitable. This delta has recorded the sedimentary deposits from the Kashmir area of the north-western Himalaya, where, in connexion with the Geochronological Institute, E. Norin has begun to make a comprehensive analysis of the Quaternary deposits, which already seems to give a direct correlation with the Swedish time-scale. It might however prove still more convenient in the first instance to take up the investigation of a delta more easy of access, such as that of the Po, which might be expected to offer a fairly complete registration of Quaternary deposits from the whole southern slope of the Alps.

In order to connect archaeological finds with the time-scale, several different phenomena can be used. Thus, the situation of the ice-border at different stages of its recession can be dated and mapped, whereby it is possible to date cultural remains as well as traces of animals and plants, which immediately followed in the track of the retreating ice. This can probably be done in the case of the Quaternary ice-dammed lake Pulawy, which was discovered by N. Krichtafowitch, south-west of Warsaw, between the Vistula and the Bug. This lake reached as far as the limits of the last glaciation and its sediments, showing no *varves*, are covered by the last moraine and contain remains of plants and animals, including *Elephas primigenius*, *Rhinoceros tichorhinus*, *Bos priscus*, *Equus caballus fossilis* and *Sus scrofa fossilis*; also pieces of bone, and flint tools which were referred by S. Krukowski to the Solutrean epoch.

It is obvious, however, that all attempted co-ordinations founded only on the occurrence of certain organisms must be merely approximate. Amongst the more reliable geophysical phenomena a first place will doubtless be occupied by such ancient shore-lines as can be dated with some accuracy and are adapted for the dating of prehistoric remains, especially those pertaining to shore-dwellings. It is true that positions of the edge of the retreating ice can be dated with still greater accuracy, but, in the central parts of northern Europe at least, human occupation had not begun at that time. During the last few years it has been found possible, by a new method of investigation, to follow step by step, and fix by levelling, the present height of a series of unevenly uplifted shore-lines dating from the nordic Bronze and Stone Ages. These measurements, which I started some years ago in the Stockholm-region, now embrace the greater part of the Neolithic marine area within the eastern-central parts of Sweden from Ostrogotia to the south of Helsingland. In this way very reliable and detailed knowledge can be obtained concerning the withdrawal of the coast line and the growth of the emerging land. It has also been found possible to connect the different stages of coastal evolution with the Swedish time-scale, and so to date approximately all the phenomena which can be connected with such coast lines.

The question of eustatic shore-lines seems to be more complicated and has not been brought into any connexion with geochronology.

On the whole it seems desirable that relative as well as approximate time computations should be expressed in another way than real datings and without figures, which give a misleading impression of precision and certainty.

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Cornish Place-names

by J. E. Gover

THE archaeological interest of place-names has been dealt with by Mr Crawford in his article 'Place-names and Archaeology' published by the English Place-name Society.[1] In that article numerous words associated with prehistoric or ancient remains are grouped together and their meanings discussed in detail, but up to the present time very few attempts have been made to deal with words of a similar kind in Cornwall.

In the course of several years' study of the place-names of Cornwall I have amassed a considerable amount of evidence which may help to throw light on the dark period of Cornish history prior to the English conquest. As some years may elapse before the results of this survey are published, a brief discussion of some of the more interesting names in the county and in particular those names which have an archaeological or historical significance, may be of interest, and at the same time indicate in what direction future work of this kind should lie.

The names with which I propose to deal may be for the sake of convenience divided into two groups. To the first belong those words which refer to ancient camps, strongholds or defensive enclosures, such as *caer*, *din*, *dinas*, *castel ;* to the second belong words which refer to graves, barrows or stone monuments of some kind, such as *cruc*, *menhir*, *cromlech*. There are in addition a few miscellaneous words which cannot easily be placed in either group.

GROUP I

CAER. The original meaning of this word seems to have been 'fort' or 'camp', and it is worth noting that in many cases the word 'camp' is marked on the map near the site of places in Cornwall bearing this prefix.

Caer corresponds roughly to the English *bury* in such names as Tidbury, Cissbury, Chanctonbury. It occurs in Wales with a similar meaning, but the Breton equivalent *Ker* has come to have the sense of 'village', a change for which historical reasons can account. The word occurs in Cornwall about 110 times as a prefix in place-names and is found throughout the county, including the extreme east. It is also not uncommon in the plural form Kerrow, Keiro, Cairo, Pencarrow (*Caerou* 1302, *Cayrou* 1327 etc., *Penkayrou* 1327, *Penkeyrou* 1420) and in the name Tregear (*Tregaer* 1256 etc., *tref*, 'homestead'). Some places are called simply Cair, Gare, Gear,[2] but as a rule the word is followed by some defining element. This may be (1) descriptive, as Carwyn (*Kaerwen* 1317, 'white'), Cardew, Carthew (*Kaerthu* 1284 etc., 'black'), Carvean (*Carvyghan* 1317, 'little'), Carvinack (*Carveynek* 1327, 'stony'). (2) a personal name, as Cargenwyn (id. 1375, 'Cenwyn' = Cuno-uindos), Carwythenack (*Kayrwethenec* 1300, 'Gwethinoc'), Carveddras (*Kaervodred* 1296, 'Modred').

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[1] Place-name Society, I, part I, 143.

It does not follow that the men bearing these names actually held or defended these 'camps'. It is more likely that the names are those of settlers who owned land near these places at a much later period of history. A name such as Carsawsen (*Corsawsyn* 1556) may however actually refer to a Saxon stronghold planted in Celtic territory at some early date. Carsawsen is in Mylor parish in West Cornwall.

There are one or two *Caer* names, which are perhaps of sufficient interest to deserve special mention.

Carlyon (*Karleghyon* 1286, *Caerleghion* 1287, *Carligion* 1327) is the name of two farms, one in Kea parish near Truro and the other in St. Minver further to the east.* There is no reason to doubt that the name means 'camp of the legion', being thus identical with Caerleon in Monmouth and the *Carlegion* of Bede (ii, 2), which is the modern Chester. Roman soldiers, or rather soldiers of the Roman Empire, may have been stationed at these two places at some distant period, and doubtless the memory of their presence remained long after they were gone and gave name to the sites. It may be pointed out that the two Carlyons occupy commanding positions, that in Kea overlooking the Fal estuary and that in St. Minver the Camel estuary. Also a few miles east of the latter place is a hamlet called Plain Street, suggesting an ancient track or road, which may have ended at the river near Carlyon and opposite the present Padstow.

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[2] For *an gaer*, i.e. the *caer*, the definite article causing 'lenition' of the initial consonant.

* It would be interesting to learn whether any prehistoric or Roman earthworks or finds are known at these 'Carlyons' and 'Merthens'. Perhaps some readers can help ?—Ed.

Tregorland (*Kaercorlan* 1302, *Cargorlan* 1327—the change of prefix is late) contains as second element the British word *corlan*, 'sheepfold'. The meaning may be thus simply 'camp of the sheepfold'. It is however possible that there was no actual fold here, the *caer* being named from its bearing at a distance some sort of resemblance to an enclosure of that kind. The name would then be of the same type as the English *stodfald*, discussed by Mr Crawford in *Introduction to the Survey of English Place-names*, i, 151.

DIN is a much rarer word occurring only some twenty times. In most cases it must have denoted something larger than a *caer*, since many of the *din*-names adjoin some of the largest earthworks in the country. There is also good reason for supposing that the name was applied to strongholds of a later period than the *caer*-names. One or two examples may be noted.

Merthen is the name of a place in Constantine and in St. Austell. There is also a Merthen Point in Buryan on the coast. The early spellings *Merdin* 1186, *Meredin* 1202, *Merethyn* 1235, *Marthyn* 1556, show that the name is identical with the *Moridunum* of the Antonine Iter, the ancient name of Carmarthen, Wales. The situation of the Cornish places on or near the sea agrees with the etymology of the name (*mor*, 'sea' and *dunum*=*din*). The large camp at Merthen in Constantine may have been constructed to guard the estuary of the Helford against the attacks of pirates.

Denzell in Mawgan (*Dynesel* 1241, *Dynisel* 1277[3]), Domeliock in St. Dennis (*Dimelihoc* 1086, *Dynmyliec* 1318[4]) and Demelza in St. Wenn (*Dynmaelda* 1309, *Dynmalsa* 1342[5]), all lie round the great camp of Castle-an-Dinas in St. Columb and were perhaps outlying strongholds attached to that place. The name Domeliock suggests the *Dameliock* of the Arthurian legends, but that place is more likely to have been Castle-an-Dinas itself, which seems to have been a royal residence in early Cornish times (v. *infra*).†

Dinham, Cardinham and Tredenham contain the diminutive form *dinan*. The fact that *din* could be compounded with *caer* makes it clear that the meanings of the two words were not identical.

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[3] *isel*, 'low' (?) [4] *Milioc*, personal name. [5] *Maeldaf*, personal name: (**Maglo-tamos*).

† Compare also the MILIDVNVM of Ravennas, which lay somewhere in the West country.—ED.

Din is found in combination with *Tre* in the form Treen (*Trethyn* 1314, 1321, *Tredyn* 1304). The two places so named are situated at opposite ends of the Land's End peninsula on narrow promontories, on each of which is a well-preserved ' cliff castle '.

DINAS is a derivative of *din* with probably much the same meaning. The corresponding Welsh word now means ' city ',[6] but the original sense is preserved in place-names. The modern Cornish form is often corrupted to *-dennis* as in Pendennis by Falmouth, where there was an old earthwork on the site of the later castle built by Henry VIII.

Castle-an-Dinas in St. Columb (v. *supra*) is mentioned as ' Castel an dynas ' in the Cornish drama *The Life of St. Meriasek*. It is there said to be the chief place (*pen plas*) of Teudar, a heathen king, who had also another stronghold at *Les-teudar* (now Lestowder) in St. Keverne near the Lizard. Possibly *dinas*, like *les* (*infra*), was a name which could be applied to the residence of a king or chieftain.

CASTEL (*Cestel*, *Kestel*) is a name not uncommon in Cornwall, the modern form being usually Kestle. It is, like Welsh *castell*, an early borrowing from the Latin *castellum* and occurs in an original charter (BCS. iii, no. 1197, A.D. 967) in the name *cestell merit*, now Kestlemerris in St. Keverne.

It is difficult to decide what the exact meaning of the word was in place-names, but it has been thought to refer to forts of a later period than *caer* and *din*. This may be so, but the remains found near the Cornish ' kestles ' appear to be of a similar type to those found near the ' caers '.

One *castel* name is perhaps worth special mention.

Castlewary in Helston parish (*Castelwary* 1338, *Kestelwary c.* 1350), would seem to contain the Cornish *gwary*, ' play ', as second element—best known in the compound ' Plan-an-gwary ', ' place of play ', a name applied to amphitheatres, natural or artificial, where the Cornish miracle plays were performed. One cannot tell whether this denoted simply a *castel* near which people played, or possibly a *castel* the ruins of which were used for the performance of miracle plays.

LES is a name applied to strongholds of a much more recent date. It is the Welsh *llys*, ' court, palace ', and probably denoted the residence of some chieftain in the pre-English days, when the county was still divided up into numerous petty principalities. For this reason names in *les* are not common, and as a rule there is about one to each hundred, the Cornish hundreds corresponding as a rule to old tribal divisions.

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[6] Due to the use of the word in the Welsh Bible.

Helston (*Henlistone* 1086, *hen*, ‘old’) is the name of two places, a town in West Cornwall and a hamlet in East Cornwall. The eastern one was perhaps the chief place of the Pagus Tricurius[7], the land between the Camel estuary and Devon, the centre being shifted later to Lesnewth (*neweth*, ‘new’), about seven miles distant.

Arrallas in St. Enoder (*Arganlis* 1086, *Argantles* 1259) contains the Cornish *argant*, ‘silver’, as first element. The meaning of such a combination is not very clear, but the fact that the defining element is placed first is evidence that the name is of great antiquity.

GROUP II

The second group of words to be discussed are those dealing with graves, burial mounds, or stone monuments marking the site of such.

The actual Cornish word for grave was *beth* (Welsh *bedd* as in Beddgelert), which, however, occurs but rarely in place-names. An example is Penbetha in Creed (*penn beþow* 969 BCS. iii, no. 1231, A.D. 969; *Penbethou* 1354), meaning literally ‘the end of the graves’, which suggests that there must at one time have been a burial-place here though no traces appear now above ground. Trembethow in Lelant (*Trembethou* 1298) and Trembleath in Mawgan in Pyder (*Trembeth* 1370), ‘the settlement by the grave(s)’, are the only other certain examples of the word in Cornwall.

CRUC means literally a hillock or mound, but was probably applied as a rule to tumuli or burial mounds, though in a few cases such as Carclaze (*Cruglas* 1284, *Curclas* 1426, *glas*, ‘green’) the name may have referred to a natural hillock. At many places bearing this prefix a ‘barrow’ is still marked on the map, and probably a good many more formerly existed, but have since been levelled by cultivation.

Cruc occurs as a prefix in the form *Creeg-*, *Crug-*, *Crig-* in many Cornish names, but in some cases it has been confused with *caer* as in Carclaze (v. *supra*), Carlidden (*Cruckledan*[8] 1356), Carnivas (*Crucneves* 1296, *Crugnyves* 1320, v. *infra*), Carclew (*Crukleu*[9] 1340), Carplight

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[7] So called in the *Life of St. Sampson*. Now Trigg hundred.

[8] ‘broad’.

[9] ‘*Lew*’, personal name.

(*Crucbleyth*[10] 1302). It is also common in the name Trencreek (*Trencruk* 1262 etc., ‘homestead by the barrow’)[11].

A few names of interest may be noted.

Carnivas may contain as second element the old Celtic *nemeton* (‘grove’) which in West Cornwall would become *neves*, *nives*.

Egloscruc is the old name for St. Issey, suggesting that the church was built on the site of an ancient barrow.

Creegavose in St. Stephen in Brannel (*Crugkeyrvos* 1345) is a compound containing the words *cruc*, *caer* and *fos*, ‘ditch’, ‘trench’. Unfortunately the whole of this parish has been turned upside down by china clay works, so that an examination of the site is not likely to give any clue as to the origin of the name.

Cartole in Pelynt (*Cruktoll* 1284, *tol*, ‘hole’) and Trekennick in Altarnon (*Crukeynek* 1332, 1368, *Curkeynek* 1394—*keynek*, ‘ridgy’) are names implying some peculiarity of shape or appearance. Barrows still exist at the former place, so that a personal visit might even now throw some light on the meaning of the compound.

MENHIR, ‘long stone’, occurs in the place-names Tremenheere (four examples). At two of these—in St. Keverne and Wendron—a ‘long stone’ is still standing, while at another—in Ludgvan—there was one complete in Borlase’s time, since broken up. The simple *Maenhir* occurs in Creed (*Manheirs*) and St. Austell (*Menheer*), but at neither place do there appear to be any remains at the present day.

The ordinary word *maen*, ‘stone’ is of course not uncommon as an element in Cornish names, but in most cases a natural stone is probably referred to. However, Tolvan in Constantine (*Tolvaen* 1302, 1310, *Tolven* 1327) doubtless took its name from a stone with an artificial hole,* similar to the well-known Men-an-tol near Penzance.

Condolden in Minster (*Gondolvaen* 1298, *Goyndolvan* 1302) seems to contain the same word, the prefix being the Cornish *gwon*, ‘plain, down’ etc. (Welsh *gwaen*). There is a hill here 1000 feet high, crowned by a barrow, but no stone remains.

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[10] ‘wolf’.

[11] In addition to the names cited, the following car- names originally had the prefix crug-, which became corrupted into car- (*mounds*, therefore, not camps should be looked for in the vicinity):—Carcade (Davidstow); Cargibbet (St. Ive); Cargurral (Gerrans); Carkeval (St. Kew); Carlennick (Creed); Carloggas (Mawgan in Pyder); Cartuther (Menheniot).

* The holed stone still exists and was illustrated in ANTIQUITY, I, 230. See also a note on ‘Holed Stones’ by Mr J. T. Blight, published as appendix I of the 44th report of the Royal Institution of Cornwall (1862), pp. 24–7.—ED.

CROMLEGH occurs three times in the quaint form Grambler or Grumbler (*Gromlegh* 1327, 1504[12]), but at none of these places are there any remains now visible, though ' cromlechs ' are to be found elsewhere in the county. The simple *legh* (Welsh *llech*, ' flatstone ') occurs in a few names such as Fenterleigh in Tintagel (*Fentenlegh* 1338, *fenten*, ' spring ', ' well '), Treslay in Davidstow (*Roslech* 1086, *Roslegh* 1338, *ros*, ' moor '), Treleigh in Redruth and elsewhere (*Trelegh* 1302 etc.), Releath in Crowan (*Redlegh* 1270, *red*, *ret*, ' ford '), but in most of these instances the stone referred to is probably a natural one.

MISCELLANEOUS NAMES

GADLES in Gluvias (*Gadles* 1327) seems to be identical with Welsh *cadlys*, ' entrenchment '.

MAKER (*Macuir c.* 1000, *Macre* 1201) and MAGOR in Camborne (*Magoir*, *Magoer*, *Magur* 1302) are the equivalent of the Welsh *magwyr*, ' wall, enclosure ', a borrowing from the Latin *maceries*. The situation of Maker on a narrow peninsula commanding the Tamar estuary favours the presence of an early stronghold here, though all traces of such would now have been obliterated by modern forts.

GWALLAN in St. Hilary (*Wallan* 1342, *Gwallan* 1415) seems to be a diminutive of *gwal*, ' wall, rampart ', a borrowing from Latin *vallum*. It is found combined with *caer* in the place-name Carwallen in St. Austell (*Carwallan* 1370).

BOR and BUR answer to Welsh *bur*, ' embankment, entrenchment ' as in Borlase in St. Wenn (*Borlas c.* 1290, *Burlas* 1327, *Bourlas* 1342, *glas*, ' green '), Burgois in St. Issey (*Burgeys* 1327, *Borgoys* 1423, *coit*, *cois*, ' wood ') and Burlerrow in St. Mabyn (*Bourlerowe*, *Burlerowe* 1421). Early spellings are required to separate this word from *bar*, ' top, summit ' in Cornish place-names.

CARN in Cornish place-names is better translated ' rock ' than ' cairn ', the word being used in the former sense in the medieval dramas. In the Land's End district it is sometimes applied to a rock pile, but there is no evidence that it was early used with this sense.

FOS means a ditch or trench, corresponding to OE *dic*. The word, like the Welsh *ffos*, is an early borrowing from the Latin *fossa*. It occurs as a suffix in Trevose and Penvose (six examples), in Trevozah in St. Petherwin (*Trevosou* 1323 etc., plural of *fos*) and as a prefix in Fursnewth in St. Cleer (*Fosnewit* 1086, *neweth*, ' new '). Whether the word had ever any archaeological significance cannot be determined without local investigation.

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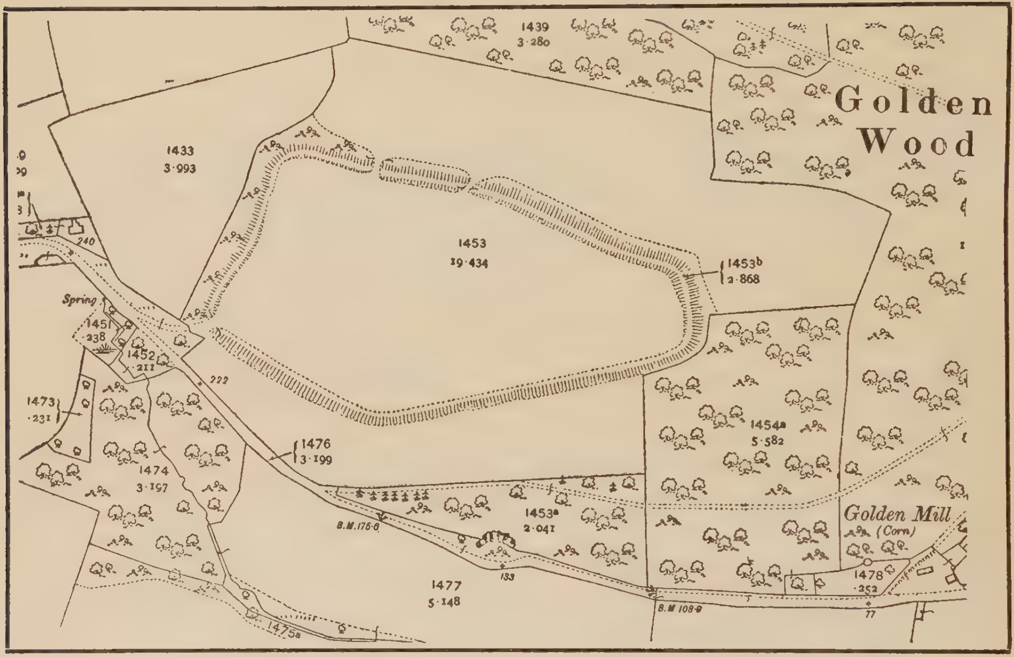
[12] The definite article *an*, understood, causes ' lenition ' of the initial consonant.

CANT in St. Minver (*Canta* 1284 etc.) contains the word *cant*, 'circle', 'rim', referring to the round hill here by the Camel estuary. Tregantle in Antony and Lanlivery contains the derivative *cantell* with similar meaning. The Antony place is *Argantel* in 1086 (*ar*, 'upon'). It is not certain that these names referred to fortified sites, though the situation of Cant favours this.



EARTHWORK AT GOLDEN (VOLIBA ?), NEAR PROBUS, CORNWALL

From the Ordnance Map LVIII. 8, *by permission of H.M. Stationery Office.* *Scale* 1:5000

GOLDEN in Probus is near the site of a large 'camp', one of the most complete in the county. The early forms are *Wolvadon* 1327, *Wolvedon* 1329, *Woulvedon* 1508, *Wuluedon al. Goldoun c.* 1550, so that there is good reason for identifying the place with the Οὐολίβα of Ptolemy,[13] though the exact site of that is not known. It is however stated[14] to have been somewhere in this part near the Fal, and since

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[13] Ptolemy, ii, 3 § 30.

[14] Camden, *Britain* (1607), 189.

Golden is on a branch of that river, there is a strong likelihood of the two sites being identical. It must be remembered that the Fal was once navigable to a much higher point than at the present day. Tregony, now three miles or more above the tide limit, was formerly a flourishing port.

Mr Crawford in his article ‘Place-names and Archaeology’, quoted above, mentions several instances in England of mocking names such as Rat’s, Owl’s, Spider’s Castle, Mole’s Chamber, etc., which were applied to deserted places where nothing but ruins were to be seen.

Many of the Cornish words which have been discussed, e.g., *caer*, *cruc*, are found compounded with an animal name, but most of these names are probably to be interpreted literally, though such a compound as Carloggas (*Kaerlogoos* 1320, *Karlogas* 1340) might refer to a deserted *caer* tenanted by mice. As Cornwall was not conquered by the English till a late date, there would have been less destruction and desolation than elsewhere in England.

The above notes will show how much field work remains to be done in this part of the country. It has not been possible to indicate more than a few of the more interesting names, but the fact that the word *caer* alone occurs about 160 times in the county gives some idea of the vastness of the subject. At many places archaeological remains are marked on the 1″ or 6″ maps, and at others a visit to the spot by an expert might reveal something either above or below ground. It must be remembered that in the course of time barrows have been levelled by cultivation, and stone monuments have been broken up by farmers to serve as gateposts or for the building of stone hedges. This work of destruction continues yearly; even as recently as Borlase’s time there were *menhirs* and *cromlechs* standing which have since vanished.

It would therefore lead to interesting results if some or all of the places in the county containing the words discussed above could be examined by an expert. There is no doubt that much would be discovered which is not to be found in maps and histories. It is to be hoped also that a careful study of the place-names of Cornwall, and wherever possible a comparison with names of a similar kind in Brittany and Wales, may ultimately serve to throw some light on the early history of the county, which before the time of the English conquest still remains in almost complete darkness.

Scandinavian Thing-steads

by F. Wildte

THE Scandinavian peoples emerge into the light of history much later than their neighbours in the South and the West, the Teutons on the Continent and in England. It was only through the Viking raids that the Nordic peoples came into touch with the rest of Europe, and were gradually converted to Christianity. Long after the introduction of the Christian faith they preserved many peculiar and archaic traits. Thus the Nordic peoples retained, with great tenacity and conservatism, their ancient judicial system. This system has therefore been the object of considerable interest even outside Scandinavia, although the manuscripts through which it has become known are much later than the corresponding documents of other Teutonic nations.

An investigation of the localities where justice was dispensed in former ages is of importance not only for the history of civilization, but also as a complement to the study of oral and written tradition, and thus to the history of law itself. In view of the many points of similarity between the judicial systems of the various Teutonic nations, some notes on the Thing-steads, or places of assembly, in Sweden, Norway, and Denmark, may perhaps be of interest to English-speaking readers.*

During the Viking Age the Nordic countries, especially Norway and Denmark, were already in close communication with the British Isles. The Swedes mainly turned their expeditions in an easterly direction ; but that they also took part in raids towards the West is

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* For a more detailed account of the Thing-steads in Sweden, the reader is referred to a paper in the Swedish journal *Fornvännen*, 1926, by F. Wildte : *Tingsplatserna i Sverige under förhistorisk tid och medeltid*. With regard to Denmark, cf. a paper in *Aarbøger for nordisk oldkyndighed og historie*, 1902, by Carl Neergaard *Thinghøie og Thingdysser*. Both these papers give further references.

With regard to the judicial system in Scandinavia as a whole, see Karl von Amira, *Grundriss des germanischen Rechts* (in *Grundriss der germanischen Philologie* 5, Strassburg, 1913).

PLATE I

THE ROYAL GRAVEMOUNDS AT GAMLA UPPSALA, SWEDEN, CONTAINING THE BODIES OF THREE SWEDISH KINGS MENTIONED IN BEOWULF

Ph. Granberg, Stockholm

facing p. 328

proved by several Runic monuments in eastern Sweden, recording the expeditions of Swedes to England. On the other hand the English carried on a vigorous missionary activity in the Scandinavian countries, the traces of which can still be seen in our oldest monuments of sacred art.

It is of course difficult to form a definite opinion on Thing-steads in Scandinavia during the prehistoric age. But from the well-known conservatism of the law we may infer that no great changes accompanied the introduction of Christianity. The Church, moreover, had no interest in making any changes in such matters, and thus we may assume that our oldest written sources reflect conditions which had remained unchanged since ancient times.

Like the other Teutonic tribes the Nordic peoples held their assemblies under the open sky. At these assemblies—Things—not only was law dispensed, but all public affairs were decided. During the Middle Ages the Things lost more and more of their political importance, but it was only at a comparatively late epoch that they became purely judicial assemblies.

There were different kinds of Things, corresponding to different judicial districts. In Sweden, the smallest district both for judicial and administrative purposes was the *heradh* or *hundari* (cf. Engl. hundred), and in some coast provinces *skiplagh*. In Denmark, the corresponding district was the *haeret*. *Herred* is also the earliest division in southern Norway. But in Norway the term *skipreiða*, originally peculiar to the coast districts, was extended generally to the smallest judicial districts.

Each of these districts (*provinciae*) had its own Thing. But they were united into greater units, called in Sweden and Denmark *land* (*terrae*), in Norway *fylken*, with Things of their own (*landsting*, *laghting*). There were also other kinds of judicial divisions, of which I shall mention here only the *syssel* (a union of a number of *haeret*), peculiar to some parts of Denmark. The towns formed distinct judicial divisions.

Since olden times the Things seem to have been held at fixed dates and in fixed places. In several of the oldest Scandinavian laws we find directions concerning the locality of the Things. Thus *Erik's saellandske lov* (first half of the 13th cent.) states definitely that a legal Thing is characterized by three qualities: the locality, the times, and the people. *Magnus Eriksson's Landslag*, which about 1350 replaced the various provincial laws of Sweden, ordains that there shall be in each *haeradh* a fixed Thing-stead, *raetter thingsstadher*. The Norwegian law, *Magnus Lagabøter's Landslov* (latter half of the 13th cent.), contains similar regulations.

It seems probable that cult-centres have also been used as Thing-steads. Several localities, in which Things are known to have been held during the Middle Ages, have names indicating that they were formerly places of worship. These centres of cults and jurisdiction probably often served also as marts ; and many towns which have subsequently attained to great importance trace their origin back to such old places of assembly, used for different purposes. To mention an instance :—the Swedish town of Karlstad originated in the old *Tingvalla*, a place where the peasantry since the oldest times were accustomed to assemble for the purpose of holding ' things ' and marts. The name itself indicates the original character of the place, just like Tingwall (þingvollr) in the Orkneys, Tynwald in the Isle of Man, Dingwall in Scotland, etc.

The Things were preferably held on eminences easily visible from the surrounding country, natural hillocks, grave-mounds, etc., so-called *Thing-mounds*, which in several ways are suitable for judicial proceedings under the open sky. The Court could take their seats on the mound, while the audience assembled around it—an arrangement both picturesque and practical. If the country was flat, as in many parts of Denmark, such a mound or barrow was the natural place of assembly. The custom of holding Things on hillocks or mounds would seem to have been general among the Teutonic tribes, and instances might be quoted from many countries.[1]

Of Scandinavian countries, Denmark has the greatest number of Thing-mounds. They seem to have been especially characteristic of the plains of Jutland, from which country Neergaard quotes numerous instances of Things being held on grave-mounds.[2] The reason for assembling on these mounds was no doubt their wide visibility across the heaths. Mounds situated near the centre of the judicial district, or near a crossing of its main roads, were preferred. Sometimes there were several Thing-mounds within one district.

In Sweden the country is mostly hilly and thus in many places offers natural facilities for Thing-steads. Consequently it is now sometimes difficult to recognize them, but nevertheless several mounds are known from different parts of the country. There is one at Gamla Uppsala, the ancient cult-centre of the Swedes, where a heathen temple once stood on the site of the later Christian church, and where several kings were interred in heathen times. (Plate I). Another Thing-mound is found at Larv, in west Sweden ; it was no doubt originally a grave mound.

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[1] Cf. Amira, *op. cit.*, p. 252.

[2] Neergaard, *op. cit.*

The Swedish Thing-mounds seldom have a flattened top, as for instance has the famous Tynwald Hill in the Isle of Man ; and where such an arrangement is found it is mostly very simple in character. One Thing-mound in middle Sweden is surrounded by a low earthen rampart, while the mound itself is a natural eminence.

A specially interesting feature characterizes the Inglinge Mound in Småland (south Sweden). On the top of the mound, which is flat and slightly sloping towards the south, there is a tall monolith, and at the foot of this monolith lies a stone ball, profusely ornamented. This arrangement, of which the Inglinge Mound is the only instance preserved, is supposed to be typical of certain mounds in Sweden, where in ancient times homage was paid to a new king, and where he exercised his authority. Such ceremonies no doubt took place on the Tynwald Hill.[3]

Thing-Mounds in the proper sense of the term apparently do not occur in Norway. It is true that there are grave-mounds, but they are not known to have been used for ‘ Things ’. As in Sweden, the mountainous nature of the country offered facilities for Thing-steads.

Popular tradition has always asserted that Things were held at circles or rings of large stones, many of which survive in Sweden and Norway from prehistoric times. These monuments usually consist of six or twelve, sometimes of as many as twenty-four, large stones, placed in a ring at regular, and rather wide, intervals. They are generally circular, but sometimes oval or square, in form. (Plate II, fig. 1). The monuments in ship form are probably of the same character. (Plate II, fig. 2).

Archaeologists have not yet succeeded in explaining the original purpose of these stone circles, but the graves sometimes found in or near them seem to indicate that they date from the Iron Age. They are thus apparently later than the similar stone circles in England. Some scholars think that the circles served as places of assembly for the purpose of worship as well as for the purpose of jurisdiction. The stone circle is thought to have served to separate the court from the rest of the Thing-stead during the legal proceedings.[4] Others are of opinion that the circles, although sometimes used for worship or jurisdiction, were originally connected with sepulchral customs. Even if the stone circles, which are very common for instance in the west of Sweden, were perhaps not originally intended for jurisdiction, it is nevertheless demonstrable that they were often used for this purpose, since several Thing-steads in Sweden, known since the Middle Ages, are situated close to such stone monuments.

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[3] A Swedish scholar, Professor Sune Lindqvist, has drawn a parallel between the Inglinge Mound and Tynwald Hill. See the Swedish journal *Rig*, 1925.

In Denmark, where stone monuments of this kind are rare, Things seem to have been held at another kind of ancient monument, the so-called ' dolmens '. The custom of holding Things at ancient monuments is known also from other countries.[5]

In this connexion it may be pointed out that there are in Sweden some Runic monuments (dating from about A.D. 1000), the inscriptions on which state them to be erected at a Thing-stead. At least one of them stands at a spot which, as late as the middle of the 15th century, was called ' commune placitum provinciae '.

But there is not always an old cult-centre, a grave-mound, or other ancient monument, at which earlier generations have been accustomed to assemble, available as a natural Thing-stead. And even if there is such a place, it may be situated, or in the course of time become situated, in an unsuitable locality, The Thing was preferably located at a central place in the judicial district. This applies especially to the Things of larger districts, (corresponding to the English shire-moots) which already at an early age appear to have been held at some important centre. With regard to the smaller districts, there is also a decided tendency to fix the Things at the chief place of the district, or at some central locality. During the Middle Ages large parts of Sweden and Norway were still very sparsely populated, and between the villages there were, as there often are to this day, large tracts of forest or mountainous country. In such circumstances it is natural that the Things should take place in the church-villages.* Numerous instances of this practice are known from Dalarne (Dalecarlia) in Sweden.

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[4] In Sweden the circular or oval rings are traditionally called *domareringar* (in English: ' judges' circles ').

[5] Cf. on this point J. Grimm, *Deutsche Rechtsalterthümer*. 4th ed. (1899) II, 424.

* This expression has a special meaning in Scandinavia where *villages* are rare, the usual form of settlement being the farm.—Ed.

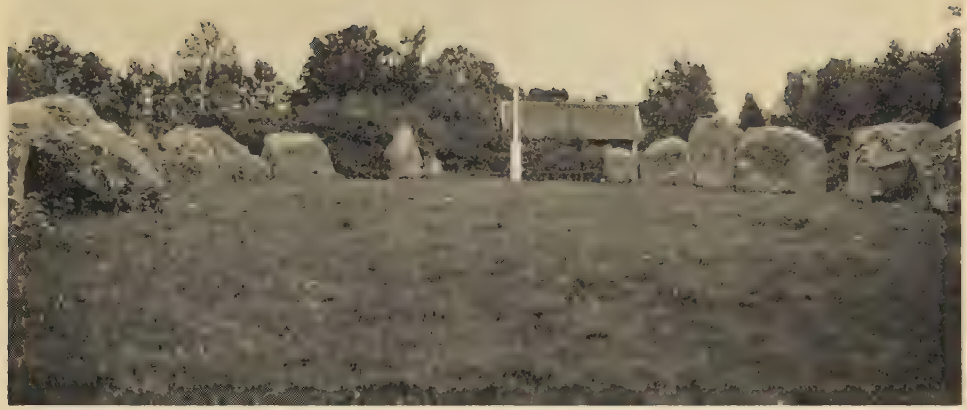


Fig. 1. A TRADITIONAL MEETING PLACE OF THE 'THING', WEST SWEDEN

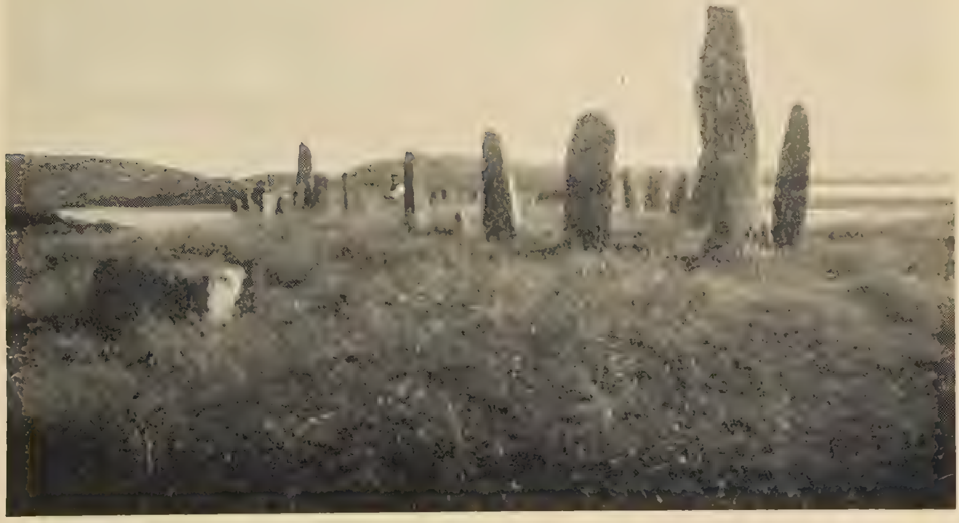
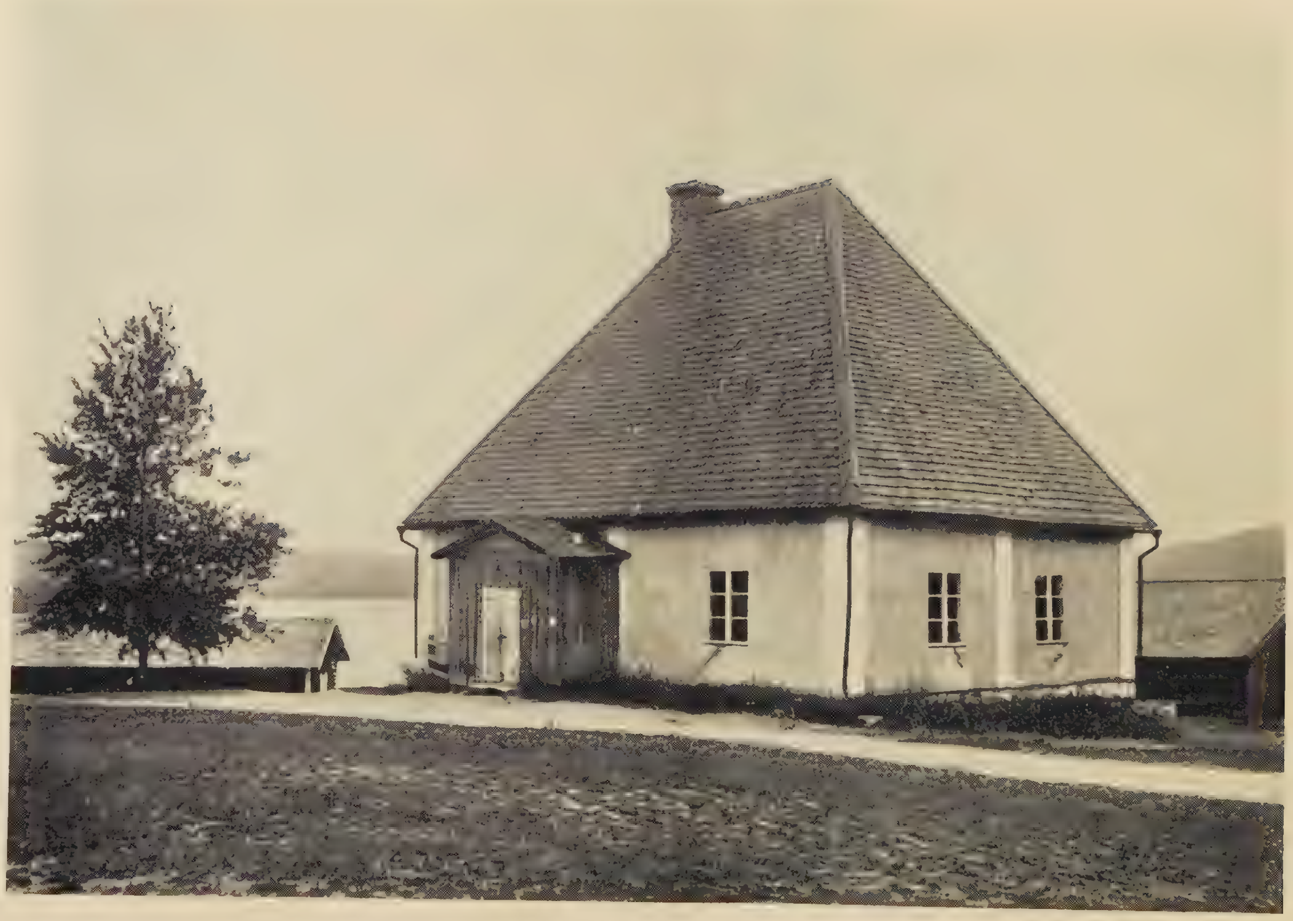


Fig. 2. STONE CIRCLE IN SHIP FORM AT BLOMSHOLM, BOHUSLÄN, SWEDEN

facing p. 332

PLATE III

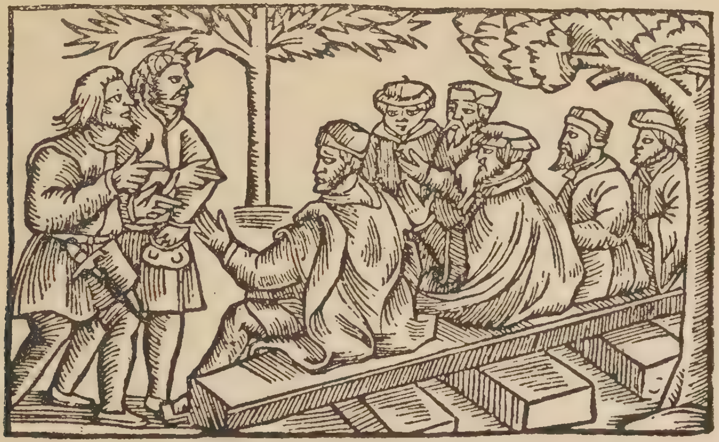


17TH CENTURY COURT HOUSE, SVÄRDSJÖ, DALECARLIA, SWEDEN

Ph. T. Gerhman, Hedemorn

Many documents record that Things were held at the church-villages also in more densely populated provinces. The church may have been built on the site of an earlier pagan centre of worship ; many parish names clearly indicate a connexion with pagan rites. Sometimes the Things were held close to the church itself, but more often in some convenient place in the neighbourhood. If there was a grave-mound at hand, it was made use of ; if not, a grove of trees, a meadow, a heath, etc., was made to serve.

The Swedish bishop Olaus Magnus, in his *Historia de gentibus septentrionalibus* (1555), relates that places with a high and free situation, in the forests, were selected for Thing-steads, where the people assembled in large numbers for the Things. The appearance of such a Thing-stead under the open sky is shown by the cut reproduced here, from Olaus Magnus ; it is used by him as a heading for the chapter entitled 'De judicibus et judiciis campestribus'. This picture, probably the only one extant of a Scandinavian Thing-stead under the open sky, shows six men sitting on two benches, at right angles to each other, and two other men stepping forward to the six, and speaking eagerly. The six men evidently represent the court, which consisted of twelve members, and the two men are the litigants. Two trees indicate that the scene is laid out of doors.



A 'THING' UNDER OPEN SKY
From 'Historia de Gentibus Septentrionalibus', by Olaus Magnus (1555)

Descriptions of early Danish Thing-steads show an arrangement similar to the one described by Olaus Magnus. The court took their seats on four logs or planks, laid in a square, on stones. A large stone in the centre was called ‘ The Thieves’ stone ’, because thieves were made to sit there while judgment was pronounced.

In England, too, the court in old times used to sit on four benches, arranged in a square, and what was done in court was done ‘ within the four benches ’[6]. This fact may perhaps indicate a Scandinavian influence.

In this connexion I may mention, with regard to Swedish and Norwegian stone circles, that the number of stones is very often twelve, a fact which has been brought forward as proof of the supposed judicial functions of the circles. As the members of the court were twelve in number, they were believed to have used the stones as their seats ; but this hypothesis concerning the number of stones may be without value. However, it is highly probable that the stone circles were used as a barrier round the space reserved for the court. We have to imagine the court sitting within the circle, the people assembling round them. Such an arrangement, with the audience assembled round an open space, seems very natural, especially under the primitive conditions of antiquity. When some of the Swedish medieval laws state that a thief should be led to the Thing and ‘ to the Ring ’, no doubt such an arrangement of the Thing-stead is indicated.

It is evident that the open-air Thing-steads were often most unsuitable for their purpose, especially during the cold season. Nevertheless the custom of holding Things under the open sky was long retained in the Scandinavian countries. It was of course very difficult to find a suitable house for the numerous assembly.[7] The custom of holding Things indoors first arose in the towns, where it was easier to provide suitable halls. But as the development in the towns shows many special peculiarities, this subject is better treated separately.

In the countryside it was natural that in case of inclement weather the Things were often removed to an adjacent church. This was expressly permitted in Iceland ‘ if the weather was inclement out of doors ’. It also occurred in Sweden, as is shown by the fact that the

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[6] Cf. F. Pollock and F. W. Maitland, *The History of English Law*, I, 556.

[7] The laws generally required a certain number of men to be present at the Thing. Originally, it was probably a universal obligation to attend the Things.

Swedish archbishop in 1380 forbad the holding of Things in the country churches. When they could not be held in churches, they were moved to other houses in the neighbourhood. Sometimes there were near the churches so-called Parish Houses, which were made use of. Instances of Things held in Parish Houses are known from Sweden and from Finland during the 15th century. Several instances are also recorded of Things being held in the sextons' houses in Sweden, and probably the rectories were also made to serve for the purpose.

The earliest record of a Thing held in a house in Sweden is from the 14th century. During the 15th century, the Things seem to have been held indoors in a comparatively large number of cases but open-air Things did not cease ; they still occur in modern times, although it is difficult to ascertain to what extent this custom survives.

In Denmark the custom of holding Things out of doors seems to have continued later than in Sweden ; it was still general at the beginning of the 17th century. In Jutland the custom of holding Things out of doors was retained towards the end of the century. Only in case of inclement weather did the assembly seek the protection of a house in some neighbouring village.

During the 17th century Court Houses (plate III) began to be built in the whole of Scandinavia, and gradually the ancient custom of open-air Things disappeared. Sweden took the lead in this development: during the century just mentioned Things held under the open sky were exceptional.

In the towns the circumstances were essentially different from those ruling in the country districts. The towns were separate judicial districts, distinct from the rural divisions, and had a legal system of their own, mainly derived from German models. The court generally met indoors. Only in Denmark legal proceedings under open sky in the market-places of the towns seem to have been of general occurrence.

Already at an early epoch the towns became the sites of courts holding jurisdiction over a larger district (*landsting*, *lagting*). It seems probable that the court here often met indoors. Instances are known from the end of the Middle Ages, both from Sweden and from Norway. Room for the courts was found in Council Halls, Guild Halls, and Convent Halls. Special Court Houses were apparently not built during the Middle Ages.[8] (See footnote on p. 336).

The review given here of the history of the Scandinavian Thing-steads does not claim to be exhaustive. My aim has only been to give a short survey of a field that has as yet been little investigated. Taking into consideration the proximity of Scandinavia to the British Isles and the constant intercourse between these two countries ever since the Viking Age, an account of Scandinavian Thing-steads would seem to be of some value also from the English point of view. While the English legal system in earlier times received impulses from various sources, the development in Scandinavia for a long time proceeded without being affected by influences from other countries. There can therefore be no doubt concerning the original character of the exterior forms of jurisdiction which have been spoken of here, a fact which enhances their value for other nations. Although of only peripheral interest for the science of law as such, these forms have a great interest for the history of civilization in general during a period when law and society were indissolubly connected.

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[8] In the old Swedish diocesan city of Skara, the special Royal Courts at the end of the 15th century and the beginning of the 16th century met sometimes in the Town Hall, sometimes in the Guild Hall, sometimes in the vestry of the Cathedral, and sometimes in various Convent Halls. During the later part of the 16th century the important *landsting* at Viborg and Ringsted in Denmark had special houses erected for their use.

With regard to England, see Pollock and Maitland, *op. cit.*, I, 555.

LINDOS, THE TOWN AND ACROPOLIS

THE ACROPOLIS OF LINDOS; ON RIGHT, A BYZANTINE CHURCH
Ph. T. Ashby

facing p. 337

Three Italian Archaeological Congresses

by THOMAS ASHBY

ITALY has been and still is the scene of unprecedented archaeological activity; and it was not unnatural that this fact should lead to the holding of a succession of congresses during the Spring. Rome, as was only fitting, opened the ball on the 2628th anniversary of her birthday, the 21st of April, with the first national congress of Roman Studies.

Very wisely the organizing committee decided, as also did the Etruscan committee two years before, to regard this as a sort of preliminary canter to an international congress to be held, I believe, in 1930, the 2000th anniversary of the birth of Vergil; and therefore to confine it in the main to Italians—though various foreign scholars resident in Rome were invited to take part, and several of them read papers.

The congress was divided into eight sections, and dealt with a wide variety of interesting topics, covering the whole field of Roman Studies from the origin of the City down to the present day, so that one often longed for the gift of ubiquity. The mere enumeration of these would occupy a considerable amount of space, and it is impossible, where most were important, and where many points of detail were touched upon, to single out any outstanding papers. It will therefore be better to await the publication of the transactions of the congress, and to take it meanwhile as an indication of the zeal and activity with which such studies are now being pursued.

The congress in Rome was immediately followed by the first international congress of Etruscan Studies in Florence. Here a better plan was followed, there being only five sections, not more than three of which (and generally only two) met simultaneously; while for the more important papers, which were read in the Aula Magna of the University, the field was kept completely clear. The honour of reading the opening paper was given to Dr Randall-MacIver, who gave an excellent survey of the archaeological material of Etruria in relation to that of other parts of Italy during the Villanovan period, followed on another day by a similar survey of the period of Oriental influence by

Prof. Von Duhn ; while on the same day Prof. Trombetti read his paper on the interpretation of Etruscan texts.

Keen expectations had been roused by preliminary announcements of the importance of the discoveries which Trombetti had made, and especially by the fact that a considerable grant had been made to him by the Italian Government : but the net result, based mainly on his study of the Agram papyrus, may be best summarized in the words of one of the three speakers—all Italians—who took part in the discussion which followed. 'We are not here', he said, 'to celebrate a triumphant return to port, but to greet the dawn of a new day, which, we hope, may be fruitful in important discoveries'. Trombetti's book on the subject was published during the congress, and will doubtless be carefully examined and discussed by philologists and linguists.*

Among other papers read we may mention Prof. Von Bissing's scheme for the scientific study of oriental monuments and objects found on Etruscan sites (whether imported by Hellenic or Phoenician traders—a point still in dispute) which, like many other useful schemes, will be enormously facilitated if the hopes of the foundation of an international institute of Etruscan Studies in Florence, with its excellent museum, are realized. A paper by Prof. Ciaceri on the influence of the civilization of Magna Graecia on Etruria in the 6th century B.C. ; another by the veteran Prof. Kubitschek on the disappearance of the Etruscan race in Roman times ; Prof. Giglioli's account of the excavations in the necropolis of Veii, the report on which is eagerly awaited—and his paper on early Etruscan Sculpture ; Prof. H. J. Rose's brilliant analysis of the relations between the Etruscan and Roman religions, in which he maintained that the basis of the latter was never seriously modified ; a paper by Sig. Calzoni on a Bronze Age station near Cetona ; and two others by a couple of local topographers, Padre Isolani and Sig. Raveggi, whose exact observation of the remains of roads and other monuments in the valleys of the Elsa and the Fiora will, as Prof. Ducati and the present writer (in his paper on the Roman road system in relation to the Etruscan) pointed out, be of great value to the archaeological survey of Etruria, so that their example deserves encouragement and wide imitation. Nor should we forget Senator Corrado Ricci's brilliant demonstration that the famous Chimaera of the Florence Museum, which was found at Arezzo in 1553, had already been discovered in the 12th or 13th century, and was buried again owing to the superstitious terror which it inspired and which may be observed even in the more enlightened minds of the 16th century.

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* Reviewed by Professor Sayce on p. 378.

At the closing meeting in Florence, honoured by the attendance of the King of Italy, Prof. A. Grenier read an excellent paper on Etruscan art and civilization in Rome ; but the work of the congress continued next day at Marzabotto, where the site and the interesting museum were visited in detail, a whole long day being devoted to the purpose, not unwisely, inasmuch as the available time was curtailed by a violent thunderstorm at midday. Its labours were concluded at Bologna, where the museum was visited, and an excellent discourse delivered by Prof. Ducati (whose able assistance to Prof. Minto, the active President of the committee, did much to ensure the success of the congress) on Thomas Dempster and the birth of Etruscan studies. The posthumous work of Dempster was published in 1723–24, almost a century after his death, by the munificence of Thomas Coke, Earl of Leicester (the uncle of ‘ Coke of Norfolk ’) who was responsible for the foundation of the Holkham collection ; and was thus rescued from the undeserved oblivion under which it still seems to rest, for it is not even mentioned by the writer of the article on Dempster in the *Encyclopaedia Britannica*. If we think how little attention had been paid to Etruscan antiquities during the early Renaissance (Ducati has pointed out that only one drawing of an Etruscan painting is to be found among the whole series of drawings in the Uffizi in Florence) we shall see that his claim to be the father of such studies is hardly exaggerated.

The practical results of such a congress, given the activity of its promoters and the probability of the foundation of a permanent international organization, are considerable. Among the problems indicated for immediate study were :—the Eneolithic and Bronze Ages of central Italy, the passes from Etruria over the main Apennine Chain and into Liguria, and the exploration of at least three inhabited sites (Cortona, Rusellae and Veii were suggested) which have so far not been sufficiently studied, attention having been mainly devoted to the cemeteries. The second volume of the *Studi Etruschi* appeared before the congress closed, while the third will contain reports of its proceedings. But the committee has also an ambitious programme for the publication of monographs on Etruscan sites and subjects : and if Prof. Ducati’s large book on Etruscan art is to be regarded as a fair specimen, the series will be an excellent one.

The first Convegno Archaeologico Internazionale to be held in

Rhodes formed an extremely pleasant sequel to the strenuous work of these two congresses, as it was a meeting at which no papers were read! The hospitality of the Italian Ministry of Public Instruction and of the Governor of Rhodes was extended to some seventy or eighty archaeologists, among whom representatives of no less than ten foreign nations were included. The voyage from Brindisi to Smyrna was uneventful, but gave an extremely good opportunity of renewing old friendships and making new ones. The Italian representatives came from every quarter of the country, and one could really feel, after the journey had come to an end, that in the future one would be able to visit any of the large Italian centres of archaeology—or art—with the certainty of finding a friendly and kindly welcome.

Smyrna was reached just too late, unfortunately, to permit of a visit to Ephesus, but the newly founded museum was inspected. It is housed in an abandoned church, and contains a number of interesting works of art, mostly of the Hellenistic and Roman period, from a variety of sites in Asia Minor—Ephesus, Miletus, Pergamum, etc. The majority of them are already published, and a summary catalogue in somewhat barbarous French has recently been brought out. Some of the sepulchral stelai are of especial interest: and among the most recent discoveries is a replica of the well-known relief representing the visit of Dionysus to a dramatic poet or to Icarius, a copy of which is in the British Museum.[1]

The next morning brought the party to Patmos, where no remains of the classical period are to be seen, and the following day to Cos, where a new museum has been installed in the splendid castle of the Knights; it is very well arranged, but contains nothing of outstanding importance. The inscriptions and sculptures which were used as building materials in the walls of the castle, and the group of cippi and columns used to support the branches of the famous plane-tree, which, if only indirectly, traces its pedigree from that under which Hippocrates once taught, have been wisely left as they were. A visit was also paid to the excavations of the Asclepieion, with its interesting temenos, containing buildings of several successive periods. The lowest terrace has a large open space surrounded by porticoes, in which were shrines, places for drinking the water of the sacred springs, and such like. On the middle terrace is the earliest sanctuary, as well as two temples of the Roman period; and on the highest the principal temple, erected in

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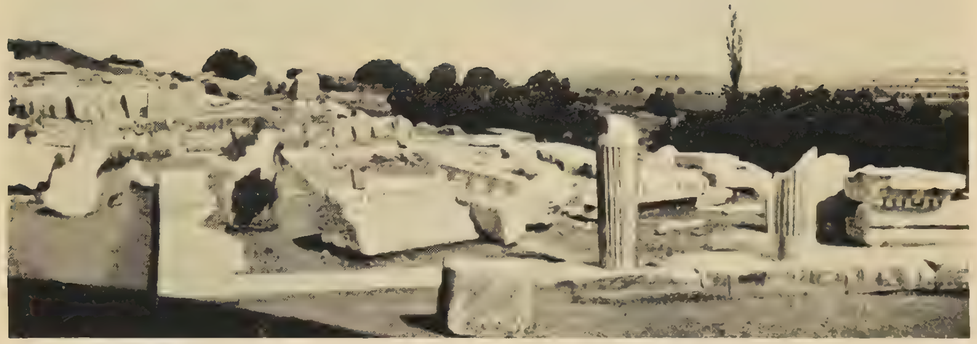
[1] Reinach, Rep. II, 464.

PLATE II


THE TEMPLE OF AESCULAPIUS, COS; MIDDLE TERRACE]
Ph. T. Ashby

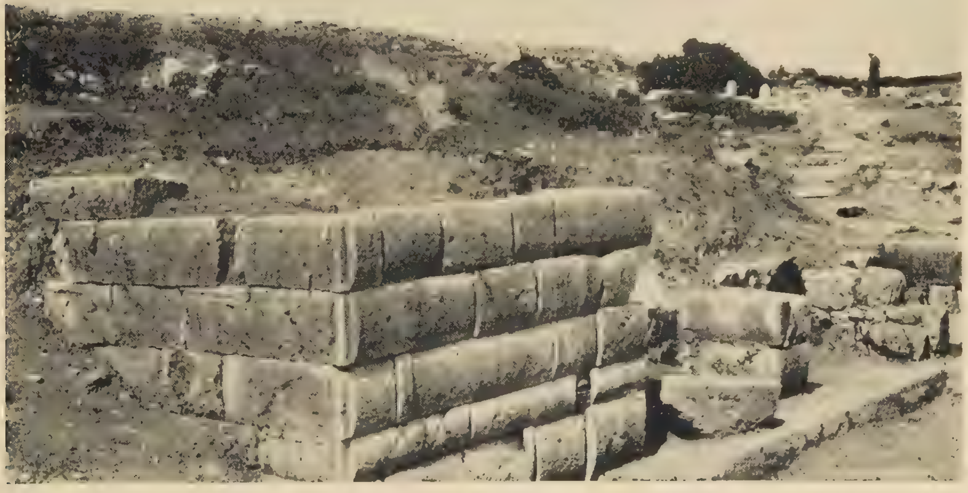
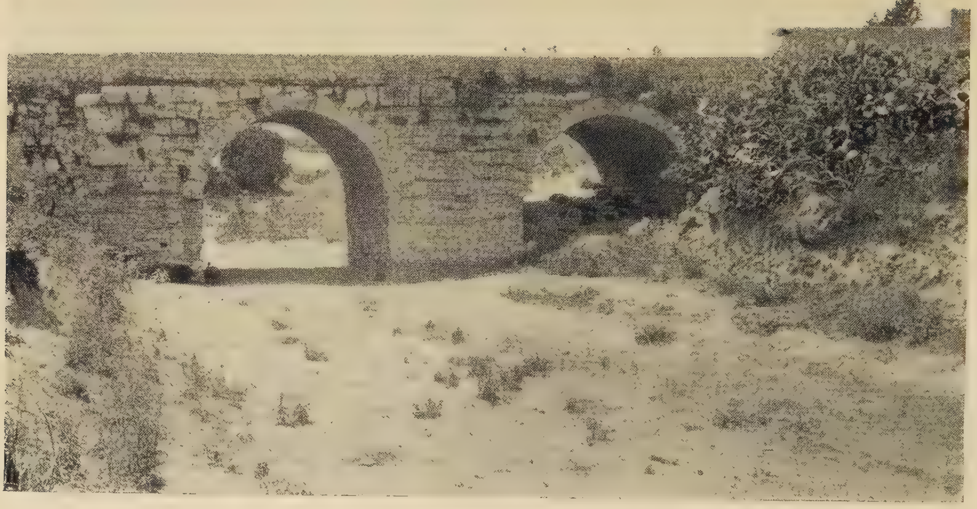
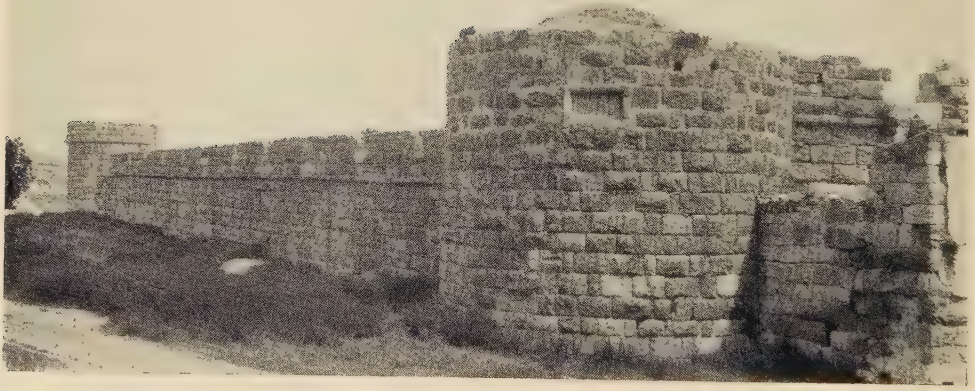

THE TEMPLE OF AESCULAPIUS, COS; WALL ON LOWER TERRACE
Ph. T. Ashby

PLATE III



ROMAN BRIDGE, RHODES
Ph. T. Ashby



MEDIEVAL CASTLE, COS
Ph. T. Ashby

Hellenistic times, and surrounded by various subsidiary buildings. The excavations are now complete, and Prof. Herzog, who conducted them from the start, and who gave a description of them on the spot, is on the eve of publishing a full account of them. It was a short afternoon's voyage on to Rhodes, and here a full three days were spent. The museum, housed in the Hospital of the Knights of St. John, which has been well and carefully restored, contains many objects of exceptional interest, including all that have been found in the rich necropolis of Ialysos. There a number of Mycenaean dromos-tombs (14th to 11th centuries B.C.) have been found, containing fine specimens of pottery and some good gold-work. The site of this necropolis is a flat-topped hill; on the slopes below it, near the modern road, are the cremation necropolis of the geometric period and the inhumation necropolis of the Hellenic period. In the latter many of the burials are in pithoi or jars of various forms, while others are in sarcophagi formed of a number of slabs of stone. Many fine vases have been found in these tombs also, some of local or Ionic fabric, others imported from Greece : and in one of them, actually excavated in the presence of the Congress and dating from the end of the 5th century B.C., an alabaster disk was found, with a figure of a discobolus painted in red upon it.

The collection of classical sculptures is of considerable interest; the most attractive piece is undoubtedly the statuette of Aphrodite drying her hair after the bath. The group of circular funerary altars and the epigraphic collection are also worthy of notice. Remains of various buildings belonging to the city of Rhodes itself have been brought to light—traces of the city walls of the Greek period, when the city occupied a far larger area than it did under the Knights ; remains of two temples, one of Aphrodite near the harbour and one of Athena Polias and Zeus Polieus on the acropolis ; traces of the stadium and of an important network of subterranean aqueducts ; a well-preserved Roman bridge and an interesting necropolis of the Graeco-Roman period with mausolea containing chambers and niches for cremations and inhumations.

But Rhodes was not founded until the end of the 5th century B.C. being laid out on a new plan,[2] perhaps with the streets fanwise. The earlier cities of the island were Ialysos, Cameiros and Lindos ; to the first we have already referred, and it is worth recalling that Salzmann and Biliotti had already discovered in its necroplis the first known tombs of Mycenaean age in 1868–71, before Schliemann had begun to excavate at all. The acropolis of the city (which has itself entirely disappeared) occupied the Monte Fileremo, a plateau nearly 1000 feet above sea level, reached by a delightful path over the wooded northern slopes of the mountain. The position was one of exceptional strength, commanding a view of both seas. From it the whole island spreads out like a pear to the south, and it was the first point to be seized both by the Knights of St. John and by Suleiman the Magnificent in their attacks upon the city of Rhodes itself. Some of the towers of the Knights' castle are still standing ; but, with two exceptions, no ancient buildings of any importance have as yet come to light.

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[2] See F. Haverfield, *Ancient Town-planning* (Oxford, 1913) pp. 31–2.—Ed.

The first is the temple of Athena on the summit, much ruined by the construction upon it of a church and cloister, the work of the Knights. It is the third as we see it, going back to the 3rd and 2nd centuries B.C. ; but votive objects have been found going back as far as the 9th century B.C., showing that the worship of Athena was here superimposed upon some pre-Hellenic cult. Among the votive objects were numerous small bronzes, including more than 2000 fibulae, the largest known collection in the Graeco-Oriental region.

The other building that is preserved is the monumental fountain on the southern side, which has been carefully restored. It has a Doric portico in front of the basin, from which water still gushes out abundantly. It may belong to the 4th century B.C., since it closely resembles the fountain of Peirene at Corinth.[3] At Cameiros the necropolis had been thoroughly ransacked, and the objects found in it divided between the British Museum and the Louvre. No monumental remains are to be seen on the site, and it was therefore not thought worthy of a visit.

Lindos, on the other hand, the scene of explorations by Danish archaeologists (the results of which are unfortunately not yet published) is a most striking site: it has remains of considerable importance. In the lower town, occupied by the modern village, there are remains of a theatre and of other buildings ; while the acropolis dominates the whole of the west coast of the island, and was therefore selected by the Knights as the site of one of their castles. Within the fortifications excavations have brought to light considerable remains of the famous temple of Athena Lindia. The temple itself was not a very large building, but was approached by great flights of steps and had imposing propylaea. The view from the summit of the acropolis is magnificent. Below the sheer cliffs on which it stands is the little harbour in which, as the legend has it, St. Paul disembarked when he touched at Rhodes on his voyage from Miletus to Tyre.[4] A large quantity of votive objects have been found at the foot of the cliffs.

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[3] See *Guide to the Excavations and Museum of Ancient Corinth* (American School of Classical Studies at Athens) pp. 50 sqq.

The whole excursion formed a fitting conclusion to a memorable visit, under most favourable conditions, to one of the most beautiful islands of the Aegean.

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[4] Acts, xxi, 1.

[5] Recent archaeological discoveries in the whole group of the Dodecanese are well described in the first volume of *Clara Rhodos*, the organ of the newly founded Institute of History and Art of Rhodes, which was inaugurated during the Convegno.

Notes and News

EAST ANGLIAN FLINTS

We have received the following criticism and print Mr Warren's reply. Mr Warren tells us that he has deliberately avoided the discussion of wider issues.

We print Mr Sainty's letter exactly as we received it; but it is incorrect to describe Mr Warren's views as unique; they are also held by many others.

SIR,

In the review by S. H. Warren of *The Antiquity of Man in East Anglia*, there appears on page 252 the following :—' A few years ago a neolithic implement derived from the surface soil came down nearly to the level of the beach, in a mixed sludge-stream in the cliffs at Sidestrand—not an unusual occurrence. Shortly after the discovery the reviewer examined the site very carefully. This becomes a ' flint implement of Early Palaeolithic-Chellean type from Lower Glacial Clay '.

This statement is definitely untrue. The implement was found by me *in situ* in undisturbed Till at a height of five feet above beach level. A heavy northerly gale had caused extensive erosion, removing immense quantities of the softer deposits of the overlying Contorted Drift, and leaving the tough masses of Till exposed as isolated promontories, rising almost vertically from beach level for a height of over nine feet, The Till contained fragments of wood and bone and many flint pebbles, which, like the implement, are stained with the very characteristic purple-black, typical of the freshwater deposits of the Cromer Forest Beds, from which they have been derived by glacial action. Mr Warren did not visit the district until five months later, and any field-worker familiar with the north-east Norfolk coast will realise the changes that five months of erosion effect in this particular area.

With regard to the classification of the implement, Mr Warren's unique views on flint fracture have been so trenchantly and devastatingly exposed (*Geol. Mag.* April 1921 ; *Man*, April 1923 and Aug. 1923) that it need cause no surprise that he considers the specimen ' neolithic '. However, every expert who has examined it—the Abbé Breuil,

M. C. Burkitt, the late W. G. Clarke, Reid Moir, and Reginald Smith among them—has unhesitatingly allocated it to Early Chelles.

I must ask you of your courtesy to publish this in the next number of ANTIQUITY.

J. E. SAINTY, B.SC.
Vice-President of the Prehistoric Society of East Anglia

From Mr Warren :—

I am greatly obliged to the courtesy of the Editor in sending me the remarks of Mr Sainty.

It is unfortunately not possible to put the clock back and replace the Sidestrand specimen into its original position for re-examination. But at the time of my visit I had a precise description of the site of the discovery, particularly of its position relatively to the small temporary promontories along the foot of the cliff. The correspondence of these details enabled me to be assured that no change sufficient to affect the evidences had taken place since the discovery.

The whole footing of the cliff was composed of material churned up by slipping on too large a scale to have been changed so quickly without being noticed : it was quite obviously not a recent fall. If it had been a recent fall we should have been told so at the time, as it was an important visit by the Geologists Association.

I have myself made too many startling discoveries of modern objects involved in geological formations by movements of the ground not to realize how difficult it is to avoid these mistakes.

I formed my own independent judgment only after fully weighing the whole associated evidences in the light of general experiences : the form and technique and the mineral condition of the implement, and the character of the site and the deposit. Even the undamaged freshness of the implement, although it may be readily matched in fractures made in or under the ice, is scarcely to be expected in a derivative obtained from an ancient pre-glacial surface soil or deposit.

SOIL-MAP OF EUROPE

The progress of soil research, especially perhaps in Russia, during the last few years has been a remarkable fact of science. Advance has been made from classification by material (sand, clay, loam, etc.), and by utilization (potato-land, beetroot-land, etc.), and by colour (grey, red, brown soils) to an attempted classification on an evolutionary basis, distinguishing steppe-soil with only humus over the country-rock from woodland-soil with, typically, an iron-containing layer between the rather pallid humus, the soil-surface of the country-rock beneath. A map of the soils of Europe on the scale of 1 to 10,000,000 with notes has been issued from the Danzig Polytechnic (Prof. Stremme) and is being prepared for English readers by Dr Ogg of Edinburgh, but the attempt is now in progress to make a more detailed map with a more elaborate classification on the scale of 1 to 2,500,000, and in this the attempt will be made to indicate not only the evolutionary forms but also the age of the soil. The vertical section of the soil is being more and more considered and technique is being elaborated. When we realize how the distribution of the loess, as given us in preliminary maps, interprets at once so many distributions and interrelations of prehistoric cultures, especially of the Bronze Age, in Central Europe, we can look forward to the promised new Bodenkarte as likely to help very greatly in the reconstruction of social-cultural evolution that is the goal of prehistoric study.

A note on the subject will be found in *Forschungen und Fortschritte* (Berlin, Unter den Linden 38 ; vol. iv, p. 163, 1 June 1928).

H. J. FLEURE.

WEDDING STONE-CIRCLES IN BALUCHISTAN

Sir Denys Bray writes :—

The note on Stone Monuments of Baluchistan in the March number of ANTIQUITY (p. 90) contains a quotation from my *Baluchistan Census Report*, 1913: 'There are everywhere [in the Brahui country] circles of stone called *chap-jahi* or dancing-plots, which mark the sites of frequent dances of some wedding procession '. And the question is put whether these words ' record a fact of modern occurrence or a legend attached to the stones '.

They refer to current work-a-day custom among the Brahuis, that interesting people of the Baluchistan frontier who speak a Dravidian language in about the last part of India where a Dravidian language might be expected. Several references to the custom are given in my *Life-history of a Brahui* (Royal Asiatic Society, 1913). Thus § 115 :—

' But if the two houses are some marches apart, the groom's father will send the *arti* on ahead, letting them know on what day he will himself follow with his company. Then must he set to work ; for the *hinnam* has to be duly performed, and there's feasting of his friends and kin, and the dancing and all. And when the time comes, he sets out with his company of riders. And ever and anon they halt by the roadside, and dance for the space of an hour or so. And on the place where they dance, they set a circle of stones as a memorial thereof. Such *chap-jahi*, or dancing-grounds, you may see along any road in Jhalawan. So they reach the house that has been set in readiness for them. And here a hearty welcome awaits them, and a jocund dance and a goodly feast for one and all. And the father of the bride makes no long tarrying, for he too has performed the *hinnam* betimes. So there's nothing to hinder them from celebrating the marriage the very night after the groom arrives '.

DOLMENS OF CENTRAL FRANCE

We received the following letter on this subject, which we sent to Vice-Admiral Somerville; his reply is printed below:—

Sir,

In reading the article on the great Dolmens of Central France in the current number of ANTIQUITY [June, pp. 147–60], I cannot refrain from challenging some of the figures put forward. To a civil engineer they are ludicrous, and one feels that the interest the general public takes in such articles will soon turn to derision in the face of such wild data.

I gather (to take one case only) that the capstone at Bagneux is 61 × 16 feet (p. 152) and that its weight is 86 tons (p. 158).

Then comes the statement that 3,000 men would be required to move such a weight with levers and rollers, and the talented author goes on (quite rightly) to wonder how on earth such a number of men could be recruited, and how, when available, they could have been clustered round the stone.

The fact is, of course, that this figure is wholly fallacious. One will suppose that a race with sense enough to use rollers and levers would also be sufficiently reasonable to lay down timbers or tree trunks over which their rollers could pass. In such case, a ton of stone can very easily be moved by two men with 5′ levers—not 30 or 40 men as your correspondent avers. I do not theorize in the matter as the business of moving 2 and 3 ton blocks of stone on rollers is one in which I am commonly engaged.

In this way 172 men would be required to roll the block, not 3000.

Again, on p. 159 we come to the statement that ' logs of wood would be crushed like match-wood if used as rollers'.* Now, in a 60′ stone, rollers could be put in every 6′. We thus have 10 rollers each as wide as the stone (16′). This gives as the total length of rollers 160′ or 1920 inches. The rollers would be rough and irregular and would certainly have ¼″ bearing. The total bearing area would be 480 square inches. Now, Molesworth gives 6,000 lbs. as a minimum figure for the weight required to crush 1 square inch of oak. We thus require 2,880,000 lbs. to crush our rollers. But the stone only weighs some 200,000 lbs.—less than one tenth of this amount gives a very useful factor of safety of 10.

In other words, a couple of hundred men with 5′–6′ levers and 10 wooden rollers each 16′ long would have made hay of the job and if your correspondent disagrees he should have a talk with a quarryman.

As one who has had to move stone and steel aggregating many thousands of tons in wild countries where nothing but the roller, the rope, and the lever were available, the phrase (p. 159) 'We are in the presence of a mystery' is only cause of derision.

Too often the public look at ancient monoliths in an awe-struck manner and tell their children 'No-body knows' when they are asked how the stones were put up. When, perhaps within a mile or two, men are doing just the same thing with just the same tools !

May I conclude by saying that I very much appreciate ANTIQUITY and wish it every possible success. But I trust you will pardon me when I say that wild statements such as those published in the article I have quoted cannot well advance our knowledge of the work the people of old times did so thoroughly.

T. H. CLARKE.

From Vice-Admiral Somerville :—

Your correspondent bases his derision on at least two misreadings of my paper on 'Two Great Dolmens of Central France'. They are as follows :—

(1) In the second paragraph of his letter he quotes me as having stated 'that the capstone at Bagneux is 61 × 16 feet (p. 152), and that its weight is 86 tons (p. 158)'.

If he will again read page 152, and if he will look once more at my plan of the Bagneux dolmen on p. 154, he will see that 'the roof is formed of *four* capstones (not one single capstone) each about 2 feet thick', and on the same page that 'the *interior space* covered by the four capstones is 61 feet long, about 16 feet wide, and from 8 feet 6 inches to 9 feet high '.

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* 'rollers of logs would be crushed into match-wood' (p. 159, lines 1-2)—ED.

Mr Clarke has confused these dimensions of the interior space of the whole dolmen with those of the single western capstone, which actually measures 23 feet by 23 feet by 2 feet 4 inches of thickness.

It is this single stone that weighs 86.06 tons—a figure arrived at on the assumption that 1 cubic foot of the calcareous rock of which it is composed weighs 156½ lbs.

This confusion of figures has led Mr Clarke into several miscalculations as to the space available for placing rollers under the block, for manning levers, and in regard to crushing surface.

That is his first misreading.

(2) Even greater miscalculation as to man-power results from what I can only presume to be Mr Clarke's lack of knowledge of neolithic implements.

In the third and fourth paragraphs of his letter he derides my figures as to the number of men required to move the 86 ton capstone. If he will read my remarks on page 158, lines 10 to 17, and if he will also visit the nearest museum possessing specimens of neolithic implements, he will see that it was a matter of impossibility in those ages to hew down oak-trees, or any sort of trees of a size suitable to be used as levers, rollers, or for a log-way along which to transport so great a block of stone.

They had not then the steel axe, saw, and adze, nor had they the ropes which were available to Mr Clarke in the present day, even in the ' wild countries ' of which he speaks, by whose means he has moved ' many thousands of tons of stone and steel '.

Even if provided with these modern implements, and accepting Mr Clarke's figure of ' 172 men ' to move the 86 ton block, it is somewhat difficult to see how that number are to be disposed around a boulder measuring 23 feet square.

It would indeed be an interesting sight to see ' a couple of hundred men with 5′-6′ levers ' making ' hay of the job '.

(3) It is true that on p. 158 I spoke of the possibilities of transportation of the block ' along a rough road ' aided by levers and rollers, only to show that the idea must be dismissed. It was, indeed, a fairly large assumption that neolithic man had knowledge of the functions of levers and rollers. My figures as to man-power under such assumptions are derived from those given by the late Mr E. H. Stone in his book on ' Stonehenge ' to which I refer on p. 158.

Although he (like Mr Clarke) was a civil engineer, I do not regard his figures as authoritative, but they are at least credible, and are within the experience of anyone who has had to do with men moving heavy weights in adverse circumstances. They are as follows :—

> Effective strength for a short, direct, vertical life, 224 lbs. (1/10 ton).
>
> Effective weight on the end of a lever, 112 lbs. (1/20 ton).
>
> Effective pull in hauling a rope, 56 lbs. (1/40 ton).

According to the above scale, as will be seen, it takes 20 men with levers to move a ton. Mr Clarke says ' two men ' ; but is, of course, thinking of a smooth ' tramway ' of logs, over which the rollers will pass with little friction. At the same time he appears to be forgetting that (in the case of the Bagneux capstone) the 86 tons mass has to be raised and placed on the rollers. Perhaps that, too, may be considered as ' hay-making ' ?

Then I envisaged the possession of hide ropes (also a large assumption) with which, according to the above scale, it takes 40 men, hauling, to move one ton.

My statement (p. 158) was ' at least 30 and probably 40 men to move one ton of rock along a rough road ', and if 86 tons be multiplied by 40 (=3440), my estimate of 3000 man-power for the moving of the great capstone of Bagneux cannot be considered as excessive, especially having in view the possibility of the road not being flat, so that up-hill strains, and down-hill restraints would need to be allowed for.

(4) In paragraph 6 of Mr Clarke's letter he finds fault with my statement that logs of wood ' would be crushed into match-wood ' if used as rollers under the 86 ton block.

The figures he quotes from Molesworth's Tables—which I cannot, of course, dispute—refer, I presume, to simple ' static ' crushing weight ; but directly the block of stone began to move (if it was possible to move it at all) over rough ground, the result on the rollers would certainly be their rapid reduction into match-wood.

I believe this would be the case with oak, or with any kind of timber, and until someone attempts the experiment, and disproves this statement practically (Mr Clarke, for example) I, for one, shall continue to hold the above opinion.

And I still contend that in considering the problem of the quarrying, transportation, and lifting into position of the four capstones of Bagneux by neolithic man ' we are in the presence of a mystery '.

THE EVANS COLLECTION

Sir Arthur Evans has presented to the Ashmolean Museum, Oxford, the magnificent collection formed by his father, the late Sir John Evans. This was the basis of Sir John's two classic works on Stone and Bronze Implements, and it is therefore intimately connected with the beginnings of scientific archaeology. We give below the substance of Mr Thurlow Leeds's remarks in the Annual Report*, so far as Britain is concerned; and we hope later to quote from the sequel which deals with the continental section. For permission to do so we are indebted to Mr Thurlow Leeds, who has succeeded the late Dr Hogarth as Keeper of the Ashmolean.

'*Neolithic*. In point of chronology many of the specimens belong more properly to the early part of the Bronze Age. Together with those of true neolithic date, they formed the basis of the earlier part of Sir John Evans's volume on the *Ancient Stone Implements of Great Britain*. There are axes from all parts of England, from Ireland, and a few from Scotland of almost all known varieties, including at least two hoards of associated implements. One outstanding specimen is an axe of polished nephrite (?) from Daviot, Inverness, possibly an import from Brittany. Noteworthy are several discoidal flint knives with ground cutting-edge; two fine flint daggers from Lincolnshire and Cambridgeshire; many perforated axe-hammers, and no less than three of the rare cylindrical cushion type from localities so widely separated as Sutton Coldfield (Warwickshire), King's County (Ireland), and Caithness (Scotland).

'*Bronze Age*. This is one of the principal divisions of the Evans Collection, since it contains a large part of the material round which the classic work on the *Ancient Bronze Implements of Great Britain* was written. Even after its publication in 1881 many specimens of prime importance were added. As an example may be taken two rapiers, one of Irish type found at Crediton, Devon, with a large palstave, an abraded counterpart of which from the same mould comes from Dawlish in the same county. The main portion of the collection is too well known from Sir John Evans's work to need recapitulation. Stress should, however, be laid on the bronze-founders' hoards from Barton Bendish, Burwell Fen, Felixstowe, and the Isle of Harty, and on a smaller personal hoard from Wallingford, the last affording a British parallel to the hoard from Fresné-la-Mère (Calvados). Continual traffic with the Continent accounts for Gaulish implements from the southern counties, and the source of the Calvados torc is illustrated by a superb series of Irish gold objects; two "lunulae" of the early Bronze Age, armlets, so-called brooches, one fine example with large cupped terminals and several of the smaller "leech" variety, including a group of three of different sizes found with a socketed axe near Belfast, and finally ring-money from Ireland and England. From Ireland also come moulds for casting implements and three bronze trumpets.

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* Report of the Visitors of the Ashmolean Museum, Oxford, 1927, pp. 17–20.

(A few verbal alterations have been made, to suit the present context.—Ed.)

'By way of balance to this wealth of metal products, the Museum has received important accessions of British Bronze Age pottery. Beakers from Suffolk and Dorset, and an incense-cup with triangular perforations in the upper part of the walls, are part of the Evans Collection, while Miss Marsh's gift comprised a small cinerary urn and several small food vessels from Northants, one a highly decorated example of a form common in Yorkshire (*Proc. Soc. Ant.*, ser. 2, xxvii, 123, fig. 5), and above all a very remarkable beaker from Harston, Leics., on which a rusticated effect has been produced by pinching up the clay into vertical and horizontal ribs.

'*Late Celtic.* This British section, hitherto never strong, shares in the impulse given to the Continental Iron Age series by Sir Arthur Evans's generosity. The principal early pieces are two La Tène I fibulae, one from Bridlington, Yorks., accompanied by two ring-fibulae, the second from Redmore, St. Austell, Cornwall (see *Arch. Camb.*, lxxxii, 77, fig. 18 c), and weaving-combs from Lancing (?), Sussex. With these must be reckoned two small pots and the upper stones of two beehive querns from Northamptonshire, presented by Miss Marsh, a cremation-burial in a cordoned vase from Cambridgeshire (Evans Collection), as also a fine bronze terret with scroll design filled in with red and blue enamel from Suffolk, purchased from the Fenton Collection.

'From the same source comes a dragonesque fibula found at Lakenheath (*V. C. H. Suffolk*, i, 271 and plate), a beautiful piece illustrating the Celtic survival after the Roman Conquest, a survival which the Evans Collection strongly supports with similar, but later, fibulae from Braughing, Herts., and Brough, Westmorland (the latter enamelled), some remarkable specimens from Cambridgeshire of types akin to the Aesica brooch, besides numerous well-known Celto-Roman forms. To the further survival into Saxon times a bird-shaped hook and an enamelled roundel, both mounts of bronze bowls, also from

Cambridgeshire, bear witness. The Celtic art of Ireland too is represented by numerous ring-headed pins, typical ring-brooches, and by the bronze finial of a drinking-horn, terminating in an animal's head in the style of the monsters of the Celtic manuscripts. The eyes are set with blue-glass studs, the cheeks with yellow enamel roundels decorated with a stepped cross set with black and white chequered enamel, and the jaws with panels of yellow enamel, altogether a very striking work.

'*Anglo-Saxon*. To the collections formed by his father and presented by himself in 1908, Sir Arthur Evans has added several important objects: a tall, conical, green glass beaker from Faversham; pottery urns from Suffolk cemeteries, three of them clearly the work of one potter; and above all a large bronze bowl, from Stowmarket, Suffolk, with drop handles and open-work foot similar to specimens found in Kent (cp. Baldwin Brown, iv, pl. cxiv, 4 and 5), all foreign imports, probably from the Rhine district.

'With Miss Marsh's gift came two cinerary urns from Rothwell, Northants, one decorated with bosses and stamped patterns; a series of bronze cruciform brooches, three pairs and a large, late sixth-century example; an armlet and other smaller objects.

'The interesting bucket-mounts with human masks (Baldwin Brown, iv, pl. cxiii, 4) found at Souldern, Oxon., in 1844, have been added by purchase to the local collection.

'Two magnificent gold torcs of Viking date from Ulceby, Lincs., form part of the Evans gift. The larger is plaited from several strands of thick wire, and terminates, as does the smaller twisted example, in round loops. A twisted gold armlet from Brightlingsea, Essex, belongs to the same period'.

ROMANO-BRITISH TOWNS

The plan opposite p. 354 is evidence of the excellent work being carried out by our own excavators. We wish it were possible to do more than merely give the 'address to which cheques should be sent', but this little we do most gladly:—

Colchester: The Excavation Committee, The Museum,
Colchester.

Caerleon: The Excavation Committee, Lansor, Caerleon,
Monmouthshire.

Richborough: The Excavation Fund, c/o W. G. Klein Esq, F.S.A.,
7 Eldon Road, Hampstead, N.W. 3.

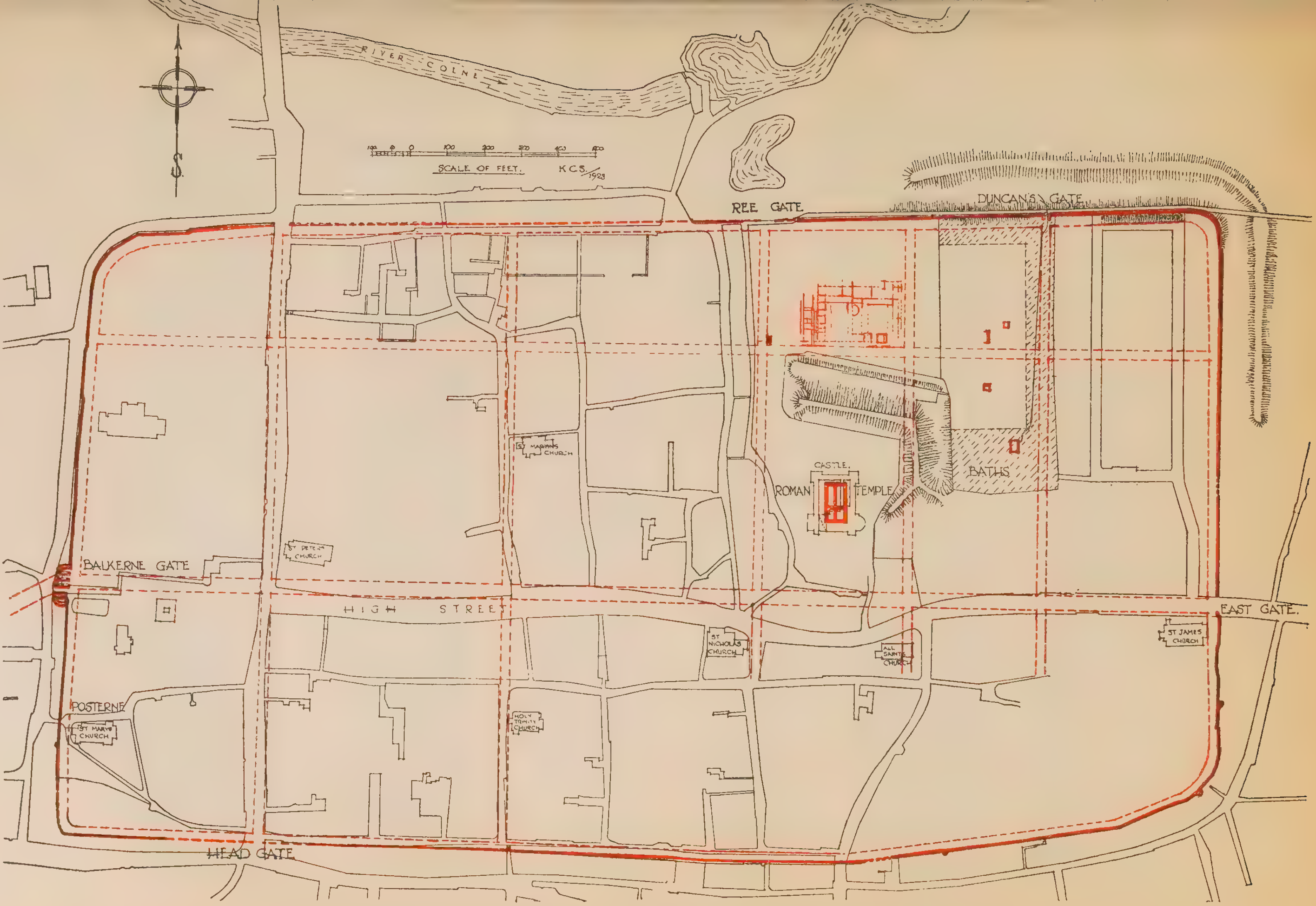
Colchester was called Camulodunon in pre-Roman times, when it was the capital of Cunobellinos, better known as Cymbeline. A ' colony ' of veterans was established there during the reign of Claudius, and the new name Colonia Claudia Victricensis imposed, but it could not oust the old one. The newly-founded ' colony ' was destroyed by Boudicca in 60 A.D. The city was then laid out afresh on a larger scale.

The present need is most urgent. The area available for excavation is indicated on the plan. It will only be available however until next February, when it is to be laid out as a sports ground. Between now and then work can be carried on continuously, but the number of men employed depends entirely upon the amount of money received. At present the results of a widely circulated appeal only justify the employment of three men. The area in question is the last open space in the town, and is known to contain some most important buildings. The buried ruins of the Forum probably remain intact to a height of 15 feet. The Excavation Committee includes distinguished representatives of the town itself and of Roman studies ; and their public-spirited action deserves the widest possible support.

In the last volume of ANTIQUITY (vol. I, opp. p. 344) we reproduced a plan of Caerleon which was circulated with last year's appeal. This year's plan, now in circulation, shows the results obtained in the interval. They are most encouraging. We would remind readers that here also excavation—and immediate excavation—is essential, since the site is destined for building on, after which no further knowledge of the Roman remains will be obtainable. The new plan shows the barracks laid bare in the western corner, the completed plan of the amphitheatre, and the beginnings of the outer ditch-system.

At Richborough work has been in progress since 1922. The work is directed by Major Bushe Fox and Mr W. G. Klein, on behalf of the Society of Antiquaries of London. The plan of the site grows in interest and complexity ; the most interesting feature at the moment is, perhaps, the great camp of Claudian or even earlier date. (The *First Report*, by Major Bushe Fox, was published in 1926 by the Society of Antiquaries, price 7s. 6d.).

We do not apologize for giving publicity to these appeals—far from it. We are proud to be in any way associated, however indirectly, with work of this kind.



Colchester, showing probable nucleus of Roman street-plan

The area indicated by hatchings to the north-east of the Castle is that which forms the subject of the recent appeal

Recent Events

The Editor is not always able to verify information taken from the daily press and other sources and cannot therefore assume responsibility for it.

An ancient rectangular enclosure on Banstead Heath, in Surrey, has been trenched by Mr S. E. Winbolt and Dr W. Hooper, the earthwork being one of a group of three near the site of the Roman villa on Walton Heath. It is suggested that the earthworks served as cattle enclosures for a Romano-British ranch, with the villa as headquarters. (*The Times*, 5 June 1928, p. 13).

* * *

In a letter to *The Times*, 28 May (p. 15) Mons. J. C. Peristianes presents some interesting details and opinions with regard to the bronze statue of the Emperor Septimius Severus which was illustrated in the June number of ANTIQUITY (p. 220).

* * *

Dr Einar Gjerstad reports finding a royal palace at Voumi in Cyprus dating from the end of the archaic to the beginning of the classic period. It is 100 metres square. Many statues and statuettes of stone and terra-cotta, dated 700 to 450 B.C., have been found. (*The Times*, 30 May, p. 12)

* * *

A communication has been received by the Roerich Museum in New York from Prof. Nicholas Roerich stating that the Central Asian Expedition, which under his direction started from Sikkim in 1924, has returned to the Himalayas. The expedition met with great difficulties but Prof. Roerich reports ‘ many scientific results ’. (*The Times*, 28 May, p. 9).

* * *

The report of Mr Guy Brunton on the work of the British School of Archaeology in Egypt during the winter of 1927–8 shows that settlements and cemeteries of an earlier date than any previously known have been found in the desert between Naga Wissa and Khawaled, in the Badari district. Some 250 burials have yielded fine pottery and other objects which illustrate the arts of an epoch hitherto little-known. Among the more important finds are a vase of basalt—the oldest stone vase known from excavations ; necklaces of Red Sea shells, and stone and ivory beads ; an amulet seeming to represent a hippopotamus and if so the earliest figure of that animal. Large numbers of flint implements, polished stone-axes, and fragments of beakers were found in the settlement sites. Grain occurred frequently : the Badarian date cannot be questioned and this find is important as early evidence of agriculture. The cemeteries discovered were of the pre-dynastic, first intermedial, and early Christian periods. In the graves were toilet vessels, scarabs, bead necklaces, button-amulets and other charms, some being of gold. Provided funds are forthcoming a further expedition will continue research during this next winter. (*The Times*, 26 May, p. 11). Mr Brunton has promised us a paper on the Badarian culture.

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During this season's work in Syria a Hittite stele of basalt representing the god Teshub has been found at Tell el Ahmar (12 miles south of Carchemish). The ruins of an Assyrian palace believed to date to the time of Tiglath Pileser have been discovered in the district. (*The Times*, 30 June, p. 13).

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The British Academy Expedition in Constantinople has uncovered the ruins of an elaborate building, with walls some 20 feet high built of brick but in part of ashlar blocks. In the course of excavation three large pedestals for statues were found : one inscribed in Greek ' Hecuba'. No other statue of Hecuba is known. Another pedestal is inscribed ' Aeschines '. A large quantity of Byzantine wall-tiles were found, a discovery of much interest as the existence of Byzantine mural ceramic has hitherto been doubted. (*The Times*, 4 July, p. 15).

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Major A. G. Wade communicates to *The Times* (4 July, p. 12), the discovery of a Roman site at Wivelrod, Bentworth, Hants. With Mr C. H. Curtis, Curator of the Alton Museum, he excavated in two hours ' the finest collection of Roman jars and sherds it has ever been my lot to recover in so short a time '.

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Dr R. Campbell Thompson reports on the excavations on the site of the Temple of Nabu, at Kouyunjik, during the winter of 1927-8.

He and his colleague Mr R. W. Hutchinson are now able to say that the Temple extended over an area about 180 feet by 160, the main chambers being built on a platform varying from 25 feet to 60 feet wide. Pieces of sculpture of Ashurnasirpal (883–859 B.C.) were found. The pottery includes fine white ware, usually wheel-made, with designs in matt or slightly lustrous black paint, both designs and fabric pointing (it is claimed) to the Mesopotamian extension of the Proto-Elamite culture of Susa, as found at Ur, Abu Shahrain and Tell el 'Obaid. In digging below the Temple pavement the walls (still three feet high) of an outer chamber of a palace of Ashurnasirpal and his son Shalmaneser, with inscribed bricks still in place, were found. This gives a clue to the position of one of the earlier (9th century) palaces of Nineveh. (*The Times*, 9 July, p. 15).

* * *

An expedition promoted by the Norwegian State Exploration Fund and other scientific institutions is investigating, under Dr A. W. Brøgger, Professor of Antiquities, Oslo University, the antiquities of the old Norse settlements, chiefly in the Shetlands. It is stated that it is intended to carry out excavations later on in co-operation with Scottish archaeologists. (*The Times*, 18 July, p. 13).

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Excavations on the site of the Roman cemetery at Walls Field, Baldock, Herts., which have been in progress since 1925 under the direction of Mr W. Percival Westell, the Curator of the Letchworth Garden City Museum, were resumed during March-April last, when the east side of the cemetery was uncovered. In the five parallel trenches dug there were 93 burial groups, varying from single burials to groups of seven. Much coarse pottery and Samian ware, of first to third centuries, was found, and 18 potters' name-stamps are recorded. Other objects include 2 perfect thumb pots, a necklet of 45 glass beads gilded, and an ornamented bronze stylus. Only one coin, of Vespasian, was found. A detailed report is printed in *The Times*, 30 July (p. 17).

* * *

The East African Expedition to Kenya Colony, which made important discoveries in the Nakuru-Elmenteita district during 1926-27 will resume its work this autumn under the direction of Mr L. S. B. Leakey, who has published in *The Times*, 1 August (pp. 15–16) an article on the earlier work of the Expedition and the plans for this next season. In his article Mr Leakey discusses the origins of *Homo sapiens*, but we must wait the full published report before criticizing the very attractive theory put forward.

* * *

Excavations financed by the University of Gröningen have been in progress this year at Dömsöd, on the Danube, just below Buda Pest. The site was previously celebrated for discoveries of bell-beakers. This year a Middle Bronze Age cemetery (urnfield) has been explored. Excavations at Tószeg, financed last year by Cambridge University Museum, were carried out in the spring with Dutch help. The site, on the Tisza (Theiss) in Eastern Hungary, was occupied throughout the Bronze Age. The most important recent discovery was an Early Bronze Age house. (*Berliner Börsen Zeitung*, 24 May).

* * *

The Reverend E. H. Goddard, F.S.A., writes to point out an error on p. 229 of the last number. The total number of coins found at Chute was 65 ; of these the British Museum kept 29, the Royal Mint kept 4, and 32 were sold to Captain Cunnington.

* * *

In a megalithic burial-chamber at Drumholm, county Donegal (Ireland), recently dug into by Mr H. Morris , there were found ' immediately under the surface sod. . . over forty white rounded stones, varying from the size of a gooseberry to that of a goose egg '. The name, formerly spelt Druim Tuama, means ' the ridge of the tomb '. (See ANTIQUITY, II, 90 ; Maguire, History of the Diocese of Raphoe, I, 384–414 ; *Derry Journal*, 30 April 1928).

* * *

To these instances of white stones found in graves may also be added that of a ' white quartz pebble triangular in shape ' from a cist at Piekie Farm, Boarhills, Fife. (*Proc. Soc. Ant. Scot.* LXI, 1927, p. 43). The cist contained the skeleton of a beaker-man. The matter was fully dealt with by Sir Arthur Mitchell in a paper on ' White pebbles in connection with Pagan and Christian burials '. (*Proc. Soc. Ant. Scot.* XVIII, 286).

* * *

We are not amongst those who deplore the absorption of works of art by the museums and citizens of the U.S.A.—excluding of course such ' irremovable things ' as buildings which cannot be torn up by the roots without being killed. The Museum of the University of Pennsylvania has acquired another magnificent wall-painting from China, where it was perishing in a ruined temple of the Moon Hill

Monastery, Ch'ing Hua Chên, Province of Honan. It is 18 by 29 feet, and is believed to date from the T'ang period (tenth century A.D.). Those who allow their masterpieces to be destroyed by vandalism or neglect have no case. (*The Museum Journal*, Univ. of Pennsylvania, June 1928, pp. 109–129).

* * *

A correspondent writes suggesting that Curators of Museums and others possessing ancient stone implements might communicate with Dr H. H. Thomas of H.M. Geological Survey (Jermyn Street, S.W. 1). It is often possible to trace the source of stone implements from the lithological character of the material; and such information is of great value in throwing light on prehistoric trade. It will be remembered that it was Dr Thomas who identified the Welsh source of the 'foreign' stones of Stonehenge (*Antiquaries Journal*, III, 239–260).

* * *

A hoard of bronze implements was found at Coulsdon, Surrey, in January 1928; most unfortunately part of it was dispersed and the association-value of different types thereby lost to science. Mr Prescott Row, however, has the matter in hand, and it is hoped that some may be traced. What survived was presented by Mr Row to the Guildford Museum. May we urge those who hear of, or come into the possession of prehistoric bronze implements to communicate with Mr Harold Peake, F.S.A. (Westbrook House, Boxford, Newbury), Hon. Sec. of the Bronze Implements Committee of the British Association?

* * *

In the last number (p. 132) we referred to a Roman villa at Berrygrove, a name which was lost. Mr Stuart Piggott, of the Reading Museum, now writes to report its rediscovery through an 18th century map on which the name was found marked at a spot close to White Waltham church, Berks (the present name is Waltham Grove).

* * *

Mr Piggott also reports the discovery of pottery on Blewburton Hill, Berks. Some of this (including a fragment of haematite ware) is regarded as certainly of the Early Iron Age; but there were also found lying on the surface of the field 'two sherds with impressed rosette design, apparently originally filled in with white material'. This suggests an Anglo-Saxon occupation of the hill. It should be remembered however that we know nothing whatever of Anglo-Danish pottery. The hill was once crowned by a camp—Bleobyrig—but this has been almost obliterated by later strip-cultivation.

Reviews

DIE SÄCHSISCHE SCHALENFIBEL DER VÖLKERWANDERUNGSZEIT, als Kunstgegenstand und siedlungsarchäologisches Leitfossil. Von FRITZ RÖDER. Göttingen: Vandenhoeck und Ruprecht. 1927.

THE ANGLO-SAXONS IN ENGLAND, during the early centuries after the invasion. By NILS ÅBERG. Cambridge: W. Heffer and Sons; Uppsala: Almqvist. 1926. 12 kronen.

Professor Röder's paper, an overprint from the *Göttinger Beiträge zur deutschen Kulturgeschichte*, runs to 35 pages, while the contribution of the Swedish archaeologist is a well illustrated brochure of 200 pages, and both are welcome studies of subjects that intimately concern our own past history. Dr Röder's treatise is a 'chip' from a workshop in which, as he tells us in his *Vorbemerkung*, he has been collecting for some years material—literary and archaeological—for a History of the Conquest and Settlement of England by Germans from the Mainland. It is devoted to a study of certain vessels and objects in metal which have a special bearing on the larger theme on which he is at work, and it is noteworthy that both he and Nils Åberg fix upon the saucer brooch as a specially significant product, following in this the example of our own Reginald Smith and Thurlow Leeds, who in *Archaeologia* have brought the same particular artifact into prominence. With the saucer brooch Röder associates the 'equal armed' fibula, a type with the head and the foot-piece drawn out horizontally to a great width while the bow is kept very short. Both these forms, which are found in special and limited areas, he claims as original creations of the Saxon metal worker, though provincial-Roman art is of course a factor in the background, and he makes the interesting observation that while both forms occur in the Old Saxon district between the lower waters of the Weser and the Elbe as well as in England, the best saucer brooches are found on our side of the North Sea, whereas our equal-armed fibulae make a poor show when compared with the Hanoverian specimens.

Most of the pages of the Professor's brochure are occupied with very careful descriptions, accompanied by illustrations, of a number of saucer brooches of the different types found in the Elbe region, in the 'Terpen', of Holland, in north-western France, and in the Saxon districts of England, a number which he claims to be larger than has been brought together before. The result of the survey throws, as he claims, new light on the Saxon settlement in Britain, but he does not bring out the results very clearly, and is reserving a complete presentation of these for a definitive work, to be preceded by a study, similar to the present one, of the equal-armed fibula. One special point which he regards as established is the presence and activity of continental Saxons in north-western France before the settlement in Britain. He does not refer here to the discoveries of saucer brooches in the Pas de Calais, for these, he points out, are late and in all probability importations from across the channel, but fixes on resemblances between objects from the Elbe district and certain finds that can be dated at about the year 400 A.D., the provenance of which was the early Germano-Roman cemetery of Vermand in the district of St. Quentin. Here was found the celebrated grave of the ‘ Chef Militaire ’, evidently a German chieftain in the service of Rome, who had been laid to rest with a full panoply, the pieces of which passed into the collection of Mr Pierpont Morgan.

Of about the same date of 400 A.D. was a tomb of a lady, buried with tomb furniture that passed into the possession of that accomplished antiquary M. Louis Pilloy of St. Quentin. His death occurred in 1922, and Dr Röder's efforts to discover the present habitat of M. Pilloy's notable possessions have been in vain. Fortunately however, in the latter's valuable *Etudes*, engravings had been published of several of the objects from the lady's tomb, while a fair photograph exists[1] of the whole set of objects as they lay in a drawer of M. Pilloy's cabinet. How it was that Saxon objects found their way into northern France in the second half of the 4th century Dr Röder says in the meantime *muss unerörtert bleiben*, and concludes with the very just assertion that to understand fully the archaeological material of the period of the settlement of the Saxons in Britain the previous continental history of the objects composing this material must be carefully elucidated.

Turning now to the second of the two publications noticed above, that by Mr Nils Åberg of the University of Uppsala, we have before us a far more substantial work than the brochure of Dr. Röder, but one which, as the latter remarks (on his p. 44), is not designed specially to deal with the ‘ previous continental history ’ of the objects that come to light in Anglo-Saxon graves in England. Of these objects viewed as English products an account is given by the Swedish scholar of a very thorough and painstaking kind, and all who are interested in British antiquities of the period of the Teutonic settlement must acknowledge the value of this careful review of what our soil has yielded up. Beside the treatment in the text there are at the end of the book thirty-five pages of inventory with topographical indications. Mr Åberg's book is moreover only the latest of a series of similar treatises on the migration period, such as *Ostpreussen in der Völkerwanderungszeit*, 1919 ; *Die Franken und Westgoten in der Völkerwanderungszeit*, 1922 ; *Die Goten und Langobarden in Italien*, 1923 ; while others go back to earlier archaeological periods. A list of the works is given on the cover of the book now before us.

Though Mr Åberg generalizes to some extent and offers suggestions as to connexions between English and continental finds, he devotes himself in the main to the examination of special classes of Anglo-Saxon objects, such as saucer brooches, cruciform brooches, buckles and strap-mounts and the like, which are well shown in more than three hundred illustrations. The book is excellently got-up, and the author has been supported by grants from two special funds as well as by Government aid. The output of scholarly works of this kind is a good deal assisted on the Continent by subsidies, which more rarely come to the aid of the British archaeologist and his publisher.

It would be impossible to follow the author in his detailed study of these various classes of antiquities, and the English reader will be more interested in the general views which the Swedish scholar has been led by his studies to adopt. He does not think that there is any marked difference between Angles and Saxons so that any sharp lines of boundary between their settlements could be drawn, but he emphasizes the distinctive character of Kentish or Jutish work, which became chiefly observable in the later sixth century, when Kent was in close touch with the Continent. This later Kentish culture bears a remarkable resemblance to that of Vendel in Sweden, especially in the matter of garnet inlays, so that visitors to the great Stockholm Museum might easily imagine that Kentish works had found their way to eastern Scandinavia. To explain this Åberg brings forward the theory that the conquest of Italy by the Lombards opened the way for the peoples of middle Europe to the Mediterranean and through that to the East, ' thereby rendering possible the establishment of connexions with the flourishing Byzantine civilization and with the Orient '. ' This development ', he adds, ' which is in full swing at the beginning of the seventh century is the prelude to the Carolingian renaissance, and is the result of the Lombard invasion of Italy '.

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[1] Published in *The Arts in Early England*, vol. iv, pl. 148, London, 1915.

That the Lombards had much to do with the encouragement of Mediterranean commerce, or that Byzantium directly influenced the later Teutonic tomb furniture, may well be doubted, though it is of course a fact that oriental products, such as Cypraea shells or amethysts, came in pretty abundantly to Kentish ports.

In the latter part of his book Mr Åberg has some paragraphs of a more general and freer kind than the necessarily rather stiff, if not jejune, analytical disquisitions on the tomb furniture. In Anglo-Saxon ornament he makes three stages of development, of which the first is characterized by spiral ornament seen first on the rare examples of the showy equal-armed fibula, an example of which was recently exhumed by Mr Thurlow Leeds in his Saxon village at Sutton Courtenay. The ornament appears next on saucer brooches dating in the century of which the middle point is the year 500, while the Brighthampton scabbard-mount of the early part of the sixth century also shows it. The other stages are distinguished in Salin's well-known formulae as ' Style I ' and ' Style II ' of animal ornament, while interlacing comes in at about the same advanced date as Style II.

Apart from the conventional work in the ' Styles ', Åberg notes a fact which had a significance for the future of Anglo-Saxon art, and this is a ' naturalistic trend in early animal ornamentation ', which he calls ' an interesting phenomenon in the Anglo-Saxon style but one difficult of explanation '. On page 170 he derives it ' from oriental Byzantine art ', in which phrase the first adjective is quite enough, and ' that blessed word ' ' Byzantine ' might have a rest. This same naturalism in Anglo-Saxon animal ornament at a much later date has been emphasized by Dr Bröndsted in his very valuable *Early English Ornament*, where he says on page 195 of the Early Christian carved stones that ' The animal ornamentation of the North of England works with true, natural animals ', they continue ' to be beings of nature, in contrast to the always highly conventionalized ornamental animals of Scandinavia or Ireland '. In another connexion also this naturalism is apparent and this is in the animal ornament of the Gospels of Lindisfarne, which, fantastic as it is in the main, is in details far truer to life than the more purely Celtic ornament of Kells or Durrow. It may be remarked in passing that this is an additional and a convincing proof of the correctness of the ascription of that masterpiece to the Saxon bishop of Lindisfarne.

In a short section on interlacing Åberg refers to the valuable paper by Einar Lexow, of the Bergen Museum, called ' The Mainlines of the History of Interlacing '. This is unfortunately almost unknown to British readers, though an English version of it might have appeared some years ago in the transactions of an important archaeological Society, that did not however avail itself of the opportunity. The last section in the book deals in a necessarily rather hesitating fashion with the difficult question of the relations of Irish ornament of Early Christian times to the contemporary styles of the countries of north-western Europe in general. Save for the Late Celtic scroll work and spirals and some simple linear motives, the famous Irish ornament derives its main motives from

Germanic sources, but later on, when Irish culture had assumed a dominant position, the debt was repaid with interest, and Irish influence on European decorative art becomes of great importance. This whole subject is of course now recognized as one of considerable complexity, but Mr Åberg has certainly made a contribution of value to the discussion of it by his recognition of the principle that the pagan art of the migration period must not be viewed as if in a water-tight compartment, but has behind it a long and interesting history, and in front of it also a period when it supplied motives to the Early Christian craftsmen, and flourished till after the Carolingian epoch it was merged in Romanesque.

We take leave of these two treatises with an additional word of recognition for the aid to British scholarship afforded by such careful contributions from abroad to the study of our national antiquities. G. BALDWIN BROWN.

THE EARLY HISTORY OF ASSYRIA to 1000 B.C. By SIDNEY SMITH. Chatto and Windus. London. 1928. 37s. 6d.

This is the third volume of the historical trilogy which the late Dr L. W. King would have written had he lived, but alas ! he had finished only the first two volumes when he was all too early cut off. There is therefore a long interval of many years between the end of his work and where Mr Sidney Smith begins, and for this reason Mr Smith, on whom has fallen this duty of devotion of completing King's work, has very wisely included in his first chapters a general survey of the Sumerian discoveries which have been made during the last few years. King apparently left no notes of his proposed third volume, so that the field was clear—a far more satisfactory condition than having to base a history on another man's framework. There is no room to doubt that Mr Smith was an excellent man for the task, and, now that his history lies before us, we can congratulate him on having maintained the high level of the two preceding volumes.

Much of his earlier chapters, as has already been hinted, might be called a history of Sumer. Mr Smith starts off with a note on the absence of palaeolithic implements in Assyria and Babylonia, a curious, well-known phenomenon, due, as he rightly thinks, perhaps to floods ; but he is unnecessarily cautious when he says ' implements said to belong to that era ' have been found in the Euphrates Valley near Dêr ez-Zôr and the Syrian Desert. Apart from the two authorities he quotes, there were very definite finds made by Sayce near Carchemish (and noted in the Proceedings of the Society of Biblical Archaeology), and I myself picked up an unmistakable *coup-de-poing* at Tell Ahmar, below Carchemish. By the time man appears in the Tigris Valley he is using handmade painted pottery, and flint tools which betray a knowledge of metal. Mr Smith is wise in declining to admit that these were Sumerians ; I personally have always felt that this painted pottery could not have belonged to this race. But that Sumerians did at one time occupy Assyria there is no doubt, and Mr Smith discusses not only the evidence for this, but also the connexion, doubtless for trade, between India, Sumer, and Egypt. As an interlude, but a most important one, comes the chapter on the Assyrians of Cappadocia who wrote so many business documents in their queer script and language. Then, as we reach the historical periods we find Assyria subject to the Third Dynasty of Ur (about 2200), and then a brief period when Ashur was independent, again to come under the domination of Hammurabi.

The greatest crux, of course, is the original home of the Assyrians. Time was when it was accepted that they were a colony from Babylonia, but now, in the face of increasing evidence, this theory has been relinquished. Not only, says Mr Smith, are there good linguistic grounds against this theory, but very heavy weights in the scale from the divergencies between Babylonia and Assyria in their social customs, the position of women, the calendar, the dating by *limmu* (not a Babylonian institution), and the penalties in the laws. He inclines to the view that their early home was west of the Tigris, north of the desert, and probably north of the Euphrates.

Space forbids me to go further into detail. I doubt the possibility that the prehistoric clay sickles may have originally had a cutting edge of small flint chips, as these sickles are sharp and hard enough to be effective, but, after all, Mr Smith only hazards it as a theory. On p. 85 he does not explain why he has ' 360 *biru* ', while on the map on the next page the appropriate place has ' 3 *biru* '. Nor is it quite a fair assessment of the immense knowledge of drugs which the Babylonians possessed to say that ' the reasoning adopted by the Babylonians to deal with disease was the logic of nightmare '. It is true that part of this method in vogue was magic, but it may equally be said that there is no magic at all in hundreds of receipts which prescribe treatment for very many ailments, wherein the symptoms are given boldly and then followed by a plain statement of the drugs to be used. The two methods of healing existed side by side.

But these are merely trivial points in an altogether admirable work which marks Mr Smith as a first-class workman in his trade. R. CAMPBELL THOMPSON.

THE CIRCLE AND THE CROSS. A Study in Continuity. By A. HADRIAN ALLCROFT, M.A. Vol. I. The Circle. Macmillan and Co. 1927. pp. xii, 370, 4 pls, and 39 illus. 12s. 6d.

This most interesting book is a collection of the author's articles published in *The Archaeological Journal*, and is the outcome, as he says, of his attempt to derive the word ' church ' from the Celtic ' cruc ' and the Latin ' circus ' and not from the Greek *κυριακόν*.

More might have been done to string the chapters together and present the author's thesis and arguments in better sequence ; but the following are his main contentions :— that meeting-places (both secular and religious) amongst European peoples from Greece to Iceland evolved from the round barrow in which the chief had been buried ; that these moots, while in many cases keeping up a memory of their origin by consecration burials and dedication sacrifices, were made without any sepulchral purpose ; that the bowl barrow developed into the ' mound moot ' which is often called a cenotaph, the ' ring barrow ' into the depressed earthen circus and amphitheatre, and the peristalith of the round barrow into the larger stone circles. ' Specialisation produced in Greece the theatre, in Rome the Circus Maximus, and the Amphitheatre, and from the same original by steps very similar has developed that characteristic structure of Christianity which we call a church '.

The author develops his thesis with much archaeological learning and literary evidence—largely classical. He has chapters on the evolution of round barrows and sepulchral rings, on the Achaean, Latin and Danish moots, on earth circles in Britain, stone circles in Aberdeenshire, and elsewhere, and on churches with circular churchyards. There are ethnological chapters on the Nordic peoples and the Cimbri and a particularly sane and informing chapter on Druidism.

With his main contention—the development of the moot from the barrow, the *locus consecratus* from the moot, and the church from them both—it is possible that many archaeologists will agree ; but in the course of his arguments the author develops such unusual views as to chronology, the sepulchral origin of certain stone circles, and other accepted beliefs, and states them with such confidence, that one feels the want of a judicial summing up after so much advocacy, to say nothing of a statement for the defence.

There is a neglect of objective archaeology throughout, and an ignoring of cultural evidence which will strike most readers.

In many cases no evidence in support is given. What evidence is there, for instance, for the statement that ' in the Christian barrow [up to the 10th century] were buried or were entitled to be buried all such of the community as could claim to be " members of one family in Christ " ' and that ' these Christian Barrows came to be so many churchyards and after many years many of them came to have each its church ' ?

He thinks the disc barrow was chronologically the latest outcome of barrow building, does not agree with Abercromby that they ceased about 650 B.C.,* thinks from their geographical distribution and *the evidence of their contents* that they were constructed by the Belgae who made their headquarters on Salisbury Plain, and states that in Ireland and Wales barrows of this type continued to be built so late as the fifth and sixth centuries A.D.—again we call for evidence.

The chapters on the Achaean and Latin moot are full of interest. The author accepts with conviction the views of Sir W. Ridgeway as to the Scandinavian origin of the Achaeans. He suggests that the thirty constituent communities that made up ancient Rome each had its own turf-circus moot and that these which he identifies with the Curiae Veteres were amalgamated in the Circus Maximus, and he sees in this the meaning of the story of the thirty little pigs which served Aeneas as a sign where to build his new city—the sucking pig being the earliest animal to be sacrificed to the Gods.

In the chapter on the stone circles of Aberdeenshire he is at pains to disprove the sepulchral origin of the larger stone circles generally—' It is a just statement of the facts to say that, while small circles, *i.e.* of 50 feet diameter or less, have frequently been found to contain interments which warrant us in believing that such circles were built as grave-monuments, there have been no such discoveries in the larger circles, where, if interments of any kind have come to light, they bear no proportion either in dignity or in number to the size of the circles '. He quotes fully from F. R. Coles' account of his very careful and complete investigation of the circle at Garrol Wood. He notes that (besides a central pit full of charcoal and incinerated bones) Coles found, in a central area 12½ feet in diameter ringed by thick squat stones, charcoal and fragments of coarse pottery with five separate deposits of incinerated human bones, each resting on a piece of granite in a shallow hole ; nevertheless the conclusion of the author is that Coles' ' own account, as quoted above, cannot possibly be accepted as proof of the presence of any grave, nor is there any sufficient evidence to shew that this circle had been constructed to be a place of burial '. All burials within the larger circles are to him either intrusive or dedicatory interments—' In not one single case is there recorded anything in the way of the solitary but imposing burial which is the proof of the purpose of the funereal monument of an individual ; there is no central grave, no dolmen or menhir, no grave-furniture '. But why should he expect a *solitary* interment ?

Though few archaeologists will agree with his conclusions as to the non-sepulchral purpose of the Aberdeenshire circles, as regards their use as moots, the resemblance to the primitive Phaeacian Moot of the Odyssey, to the Greek Theatre and to the Danish Ting, as set forth by the author, is very striking.

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* Abercromby's date was based upon a misconception, as we shall show in a forthcoming article. It is most unlikely that any disc-barrows were made after, say, 1000 B.C. at the very latest.—ED.

Of many other stone circles in the British Isles the author gives descriptions. He denies their sepulchral purpose in Cornwall, Derbyshire and elsewhere, and claims nearly all as moots. Where they occur two or three together the difficulty is explained by supposing that the larger ones were constructed later to accommodate an increased population, noting that these are generally the best preserved ; or by the suggestion that the older one may have been desecrated, *e.g.* by the shedding of blood, and therefore abandoned. He quotes Mr W. J. Andrew that the Derbyshire circles are distributed over the map at regular intervals of eight miles, and suggests that the area was regularly mapped out into sections and each section provided with its own moot, and that the Druids were sufficient adepts at geodesy to plan their position over difficult and broken country.

The author's ascription of archaeological structures to a late date appears to be an obsession. He notes that in south Northumberland and the county of Durham circles are unknown, camps strangely few and even barrows are rare. This he explains by supposing that the Romans evicted the population south of the wall, implying that the numerous circles, camps, and barrows north of it were built later than the wall ; the generally accepted chronology of these structures he considers to be mistaken. It is indeed with his views of the date of the stone circles that nearly all archaeologists will quarrel. Like Fergusson he puts them very late though not actually post-Roman—' When the first of the great circles was set up in Britain we may know when we know in what year came the first of the Brythonic tribes to these islands ; that was certainly not at any very remote period as archaeology counts '. This he supports by their geographical position, asserting that they are confined almost exclusively to the regions where the Brythons penetrated, having their centre about Stonehenge and Avebury and pushing mostly along the high ground, southwest into Devon and Cornwall and northwards by way of the Cotswolds and the Pennines into Wales, Derbyshire and Strathclyde. He points out that they are most remarkable and best preserved just where the Brythons longest maintained their independence : Cornwall, Strathclyde and Aberdeenshire and certain parts of Ireland. But the route along the high open ground must have been that of all invaders from across the Channel, and what is the evidence that Aberdeenshire and those parts of Ireland were specially Brythonic ? He argues that the stones are embedded such a short distance in the ground that stone circles could not have stood for more than a short time. But the instances given are mostly from fallen stones, few from those that are standing.

Stonehenge he claims definitely as a moot erected about 450 B.C., though he repeats the common error that two ' astronomical pointers ' mark the rising and the setting of the sun at the winter and summer solstices. He belittles all the accumulated negative evidence of its pre-metallic age, and omits all mention of the positive and conclusive proof—the discovery of a foreign stone in a long barrow—that these stones were brought to Salisbury Plain before the end of the neolithic period. Here at least is a definite fact.

He makes no attempt to account for the purpose of the stone circles which are too large to have been moots, such as Arbor Low, and Avebury.

In support of the Brythonic or Cimbric origin of the stone circles he points out that these, apart from the smaller ones of sepulchral purpose, are hardly to be found except in Brittany and the area thence northwards to Jutland with outlying examples in southern Sweden and Norway. Going further afield he admits that there are stone circles of various dimensions and elaboration in Algeria and North Africa, beyond Jordan, in Arabia, in India, in Japan, and even Central America ' but all these appear to be sepulchral' and few of them, he says, approach the grandeur and dimensions of those which lie between Jutland and Fermanagh, between Brittany and the Moray Firth. The fact is that a proper study of the distribution, character and dimensions of stone circles in the Northern Hemisphere has yet to be made, and that interesting as Mr Allcroft's views may be, the time has not yet come for any conclusions ethnological or otherwise to be safely drawn.

The chapter on earthern circles and amphitheatres in Dorsetshire and the South of England is one of the most interesting and convincing. It is undeniable that many of the British villages on the chalk have circular depressions which fulfil the conditions laid down by the author—the sunken floor, the gentle broad interior slope of the unfossed vallum, the position close to the road and just outside, or occasionally inside, the defensive bank of the village. Doubtless some of them may have been moots, but unfortunately these are just the characteristics of a village pond, especially when such depressions are found, as they often are, near the head of a combe. Only when accessory drains to keep them dry are found can one exclude this simpler explanation. The downs too, and especially it would seem in the neighbourhood of ancient occupation, are often covered by small circular depressions difficult to account for ; possibly they may have been chalk pits to supply mud-walling for the dwellings—they are too big for hut circles, and too numerous for moots.

The author we think weakens his case by claiming too much ; Pond barrows for instance are classed as Moots, but they occur in groups often of the same size ; they are associated with Bronze Age barrows, and are so beautifully symmetrical that they can hardly belong to the same class as the circuses described and figured in the book. Even mazes are swept into the net.

The author's ethnology is extreme Nordic—Kelts, Achaeans and Galatians, Goidels, Brythons, Belgae, and even Picts, are all Nordic and Cimmerian with some admixture of Iberian. But it is to be doubted if all the round- and medium-headed inhabitants of this Island are to be accounted for without some further brachycephalic strain than that of the Beaker Folk.

His etymology is fearless. '*Ting* is identical with the Greek δίκη and δίκη is another synonym for *moot*' and *ring* (*krink* in Low Dutch dialects) is etymologically identical with the Latin circus and cognate with the Greek κύκλος.

The whole book is interesting and stimulating. The main thesis is not new and is perhaps true, but unnecessary opposition to it will often be excited by extravagant assertions.

J. P. Williams-Freeman.

HARRISON OF IGHTHAM. Prepared for publication by Sir E. R. Harrison. Oxford. 1928. 15s.

Benjamin Harrison was well known during his lifetime to all British archaeologists, and his name will always be associated with the discovery of eoliths. A life of him was obviously needed, and the present book admirably fulfils its purpose. Harrison kept the village shop at Ightham, and his knowledge of the district was extensive and remarkable, as the notes and letters in this book show. In the earlier years of his life his interests were perhaps less closely restricted than in the later years, when 'flints' came to absorb more and more of his time. One interesting feature that is now made quite clear is that the same deposits yielded both eoliths and palaeoliths. This fact makes it unnecessary to debate the question as to whether these eoliths are natural or humanly shaped objects, since the palaeos alone are sufficient to attest the presence of Man at the time when these plateau deposits were formed. Had Harrison confined himself to explaining the discovery of palaeoliths, and comparing the deposits here with others in which they had previously been found, there would have been no controversy, and those who are still completely sceptical about the human origin of eoliths cannot help regretting that he placed so much evidential value upon them.

The book makes good reading and is edited in a most scholarly manner. There are very few points of criticism to be made, but it is unfortunate that the megalithic remains at Coldrum are described as ' a stone circle '. The plan is most clearly rectangular, and consists of a burial chamber at the east end of what was originally a long barrow.* The book is a record of a valuable life, and gives interesting side-lights on the history of archaeology in England from a new angle.

PRE-ROMAN BRITAIN. By H. J. MASSINGHAM. Benn's Sixpenny Library, no. 40.

This book possesses all the faults of *Downland Man*, of which it is a réchauffé, but nevertheless the publishers demand the exorbitant price of 6d. a copy. The style is bad, and the meaning (if any) of the extraordinarily long sentences very obscure. Such expressions as ' the . . . long barrow, . . . and the dolmen were smalled into the cist or cairn ' indicate that the eccentricities of the author have ' bigged '. Scotchmen, who value their sixpences, should beware. R. C. C. CLAY.

THE EARLY IRON AGE IN ITALY: A Study of those Aspects of the early Civilization which are neither Villanovan nor Etruscan. By DAVID RANDALL-MACIVER. Oxford: Clarendon Press. 1927. 84s.

The Early Iron Age civilizations of the Apennine Peninsula are generally apportioned between two 'races' distinguished by their burial rites. Dr Randall-MacIver has adopted this division from his Italian colleagues, but he has subdivided the cremationist ' race ' into three ' nations ' each regarded as having entered Italy already distinct and differentiated. The inhumationists are said to be aboriginal in the Peninsula from neolithic times, but differ so much among themselves that their several branches are sometimes spoken of as ' races '.

The same author has already described the Villanovans in a former volume. The first part of *The Early Iron Age in Italy* is devoted to an account of the cremationist groups living in Venetia and the lake district respectively, the Atestines, authors of the brilliant civilization disclosed in the cemeteries round Este, and the Comacines whose chief necropolis is Golasecca. The second and third parts deal with the inhumationists—the ' Picenes ' interred at Novilara, etc., and the various peoples buried in the cemeteries of southern Italy and Sicily. The materials here treated are very varied and complex, far more so than the furniture of Villanovan graves, and hence the treatment is inevitably more summary than that offered in the previous work. The illustrations are however a decided improvement on those of *Villanovans and Early Etruscans*. Instead of reproducing wholesale plates from Montelius' well-known works, the author has here collected a multitude of objects hitherto unpublished or buried in inaccessible periodicals and so made an important body of comparative material available for study. Incidentally a number of the foreign terms, slavishly transcribed by most writers on Italian archaeology, have this time been replaced by the familiar English equivalents.

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* See Ordnance Survey, Professional Paper, new series, no. 8 (1924), plate 1, no. 2 (plan).

And how important this material is ! It was through the Atestines that the ‘ situla ’ style reached northern Europe. But Randall-MacIver shows by a critical analysis, illustrated by a welcome new photograph of the Certosa situla, that the style was primarily Etruscan and only reached Venetia from that quarter. Atestine culture is indeed full of reminiscences of the continental ‘ Hallstatt ’ culture, from antennae swords onward. A discussion of the beads and glass, especially of that curious group of vases from Sta. Lucia, whose shapes seem typically native, would have further helped the elucidation of our problems. The Comacines, here for the first time traced back to the beginning of the Iron Age (Benacci I), have no less intimate relations with the urnfield cultures north of the Alps. Indeed the stone circles at Golasecca invite comparisons with the Celtic west though only the Etruscan circle graves are here cited.

The Picene culture, of which this is the first connected account, belongs to a different world. Its affinities as suggested by the bronzes are all specifically northwest Balkan. A glance at the pottery reveals a whole series of nuances that characterize the treatment of clay in the Middle Danube basin. Still more curious parallels might be cited for the native pottery of Calabria. On the strength of burial rites and Polybius, this pottery is assigned to men of Siculan race. It includes biconical jugs and water-jars of Villanovan form. To avoid the inference of proto-Villanovan influences as postulated by the late Professor Pigorini, our author suggests that these shapes, and so the Villanova ossuary itself, have a neolithic ancestry. Yet precisely the same forms adorned with just the same flutings and equipped with identical handles come from cemeteries in Slavonia !

We are left by a study of this volume with the impression that pre-Roman Italy was a veritable mosaic of peoples just as history represents it. Their connexions among themselves and with the outside world were obviously of a very intricate order. They can only be unravelled, if at all, with the aid of far more extensive and systematic excavation and above all of better publication than have hitherto been the rule. In these two monumental works Dr Randall-MacIver has gone as far as a foreigner can towards filling the last mentioned need. The accurate definition of cultural phases and the establishment of a sound chronological framework is the indispensable precondition to any historical reconstructions. It is also what the English archaeologist most needs since his chronology is largely dependent on that of Italy. It is just in this work that our author is most happy.

V. GORDON CHILDE

FESTSCHRIFT ; publication d’hommage offerte au P. W. SCHMIDT ; edited by W. KOPPERS. Pp. 977 with 41 plates, 2 maps and 158 text figures. Vienna, 1928.

Father W. Schmidt was many years head of the great Jesuit missionary training college of St. Gabriel’s at Mödling near Vienna, where for the first time missionaries received regular and systematic training in anthropology as preparation for work in the field. As such, and as the leading exponent of the ‘ culture-historical ’ method, he has exerted an immeasurable influence over the widest circles. The extent and value of that influence can be guessed by glancing at the names of the seventy-six contributors to this volume of essays presented to Father Schmidt on his sixtieth birthday. As the recipient worked primarily in the field of comparative religion and philology, the majority of the papers naturally refer to those disciplines. But there are many articles which deal directly with prehistoric archaeology and others that bear upon its problems. It is the duty of a reviewer of such a work in ANTIQUITY to draw attention to some of these which would otherwise escape the notice of archaeologists who might easily overlook a volume of this kind.

Of first rate importance is Prof. Junker's paper, 'The development of prehistoric culture in Egypt, (in German). Beginning with an able critique of Scharff's *Grundzüge* the author draws attention to many new points, for instance the existence in parts of Lower Egypt of a culture, parallel to but distinct from the First Predynastic of the south, and illustrated by some stray vases published by him in *Tura* (their dating is confirmed by a grave at Ma'adi excavated by Bovier-Lapierre but still unpublished). No less important, if shorter, are Dr Franz' paper 'Old European boomerangs' (finds from Brabrand and later; the flint sabre from Favrskov, Denmark and its bronze counterpart from Hede, Sweden, not necessarily copied directly from Oriental models), and that of Prof. Sirelius on prehistoric sleighs (one is datable to the Littorina maximum but was not necessarily, as the author had previously thought, drawn by tame reindeer). Prof. Menghin contributes a bold and brilliant paper 'Zur Steinzeit Ostasiens' wherein an attempt is made to correlate the stone age culture of Further India and China with those of the Baltic, the Danube basin and Mediterranean lands. We find that Kunda belongs to Ural-Altaic folks and Tripolye people went eastward to turn up in China as Tocharians. Lastly we must mention a paper on Magdalenian pictures of disguised bears at Trois Frères by Count Bégouen and another on a group of stylized rock-paintings from Spain by the Abbé Breuil.

Of course there is a great deal outside the prehistoric section that has important bearings on archaeological problems. The very first article in the volume deals with the philological relation of the Subaraeans (that ill-defined group in northern Mesopotamia to which the Mitanni people belonged) to Prof. Marr's Japhetic family of languages. Another explanation for prehistoric trepanations is suggested by Dirr's account of the appeal to this operation as a proof or ordeal in the customary law of the Caucasus. Rivet illustrates his, in itself very striking, paper, 'Relations commerciales précolombiennes entre l'Océanie et l'Amérique' with a good account of early navigation on the Pacific coasts. But if I wander into these sections, I shall never stop. Even the most provincial antiquary will find the book packed with illuminating matter and he had better buy it.

V. Gordon Childe.

THE MINOAN-MYCENAEAN RELIGION AND ITS SURVIVAL IN GREEK RELIGION. By Martin P. Nilsson. C. W. K. Gleerup, Lund; H. Milford, London. 1927. pp. xxiv, 582, 4 plates. 31s. 6d.

In his *History of Greek Religion* Professor Nilsson paved the way for this book, which is the most important yet written on the Minoan-Mycenaean religion and will long remain the fundamental work on the subject. Ever since the discoveries on the Greek mainland, in Crete, and elsewhere, first gave a rough conception of the religious ideas of the Minoans and Mycenaeans the contrast between their religion and the Olympian pantheon of classical Greece has been a hard problem. The school of Frazer has taught that behind the Olympians there lies a great background of primitive beliefs, many of which have analogies among more or less uncivilized peoples all the world over. Now the author suggests that the Minoan-Mycenaean religion was not a kind of monotheism devoted to the Great Mother and her son and consort, but was distinctly polytheistic and formed the basis from which classical Greek religion evolved. There are four main factors. The first consists of the primitive beliefs already mentioned, the second of the Minoan-

Mycenaean religion, the third of the true Greek element which is practically limited to Zeus, and the fourth comprises new divinities introduced from without. This avoids the difficulty of reconciling Homeric and pre-Homeric religion and of the idea that the latter, introduced by an assumed invasion of fair and godlike Achaeans from the north, entirely obliterated all traces of the previous religion. Professor Nilsson does not advance a theory and then seek for evidence to establish it, but works on true scientific principles. He first collects the facts, classifies them and subjects them to strict examination, so as to avoid mistaken analogies and irrelevant detail as far as possible. Then with a wonderful flair for the essential and a wide knowledge of religions he gives their interpretation.

An introduction shows his view of the historical context as reconstructed from the archaeological evidence. He believes that the first Greeks, Ionians, entered the country in the middle Bronze Age and that like the Northmen of later days, they raided overseas and destroyed the Cretan palaces, and brought back with them to the mainland rich spoil and cunning craftsmen as slaves who taught them the Minoan civilization. Later, about 1400 B.C., the Achaeans arrived, overthrew the Ionians and drove them to settle across the Aegean. This, though a good working hypothesis, rather slurs some of the archaeological factors on the mainland. On the other hand the author does good service by emphasizing the divergence between Crete and the mainland and lays special stress on the differences observed in burial customs, which indicate dissimilar ideas about the dead, and on amber and the boar's tusk helmets which figure so prominently in mainland tombs. Though the Greeks, Ionians and Achaeans, adopted the Minoan culture, yet as time progressed the Cretan veneer wore through and the Greek element came to the front again. A native art is always strengthened by resistance to an invading culture and this culminates in a reaction in which the indigenous at last absorbs the foreign.

The main part of the book divides into two sections. In the first Professor Nilsson examines in detail the archaeological evidence for the various phases of the Minoan-Mycenaean religion and sets out his conclusions clearly. He treats in turn sanctuaries natural such as caves, and artificial such as shrines in palaces and houses, and then their equipment of altars, tables of offering, and sacred vessels and vestments. He proceeds to the familiar cult objects, idols, trees and pillars, double axes, birds, and horns of consecration, and ends with a chapter on the Minoan-Mycenaean pantheon and another on the cult of the dead.

The second section, taking the deductions of the first as a basis, shows how many Minoan-Mycenaean survivals there are in classical Greek religion. One great point is the continuity of the cult places which can be seen at many of the most renowned Greek sanctuaries : Delphi, Eleusis, Amyklai, Mycenae, the Argive Heraeum and Athens itself. He shews that, apart from Diktynna, Britomartis and Aphaia who were already suspect, several Olympian goddesses have a Minoan-Mycenaean ancestry : Hera, Athena, Artemis, Eileithyia and Helen. An illuminating chapter is that on the divine child treating naturally the birth of Zeus in Crete, and other child deities : Hyakinthos whose name betrays his non-Greek origin, Ploutos and Dionysos. He concludes with the Hero Cult and the After-Life, where he finds as stated one of the great distinctions between the practices of Crete and of the mainland.

This brief survey of an excellent and learned book of nearly six hundred pages indicates its scope and the author's views, which are eminently reasonable, for just as the historical Greek people was formed by a fusion of Greek and non-Greek races, so it is only natural that its religion should also have been a combination of the two. It is a model of method and most stimulating in thought, and will inevitably cause a revision of the theories hitherto current not only about the Minoan-Mycenaean religion, but also about the classical Greek religion itself, and no Hellenist can afford to overlook it.

A. J. B. Wace.

THE AURIGNACIANS AND THEIR CULTURE. By George L. Collie (Curator of the Logan Museum), being the Logan Museum Bulletin, vol. 1, no. 1. Published by the Logan Museum, Beloit College, Beloit (Wisconsin). January 1928. 75 cents.

Mr Collie has started what is intended to be a series of Bulletins issued by the Logan Museum. This first number gives a clear and concise sketch of one of the most important cultures of prehistoric times. It is by no means a 'scissors and paste' work ; the author has himself undertaken investigations in the field and has had the opportunity of studying many of the results obtained by other prehistorians. It may be suggested that Mr Collie's book is too cut-and-dried ; that he has too skilfully skated over the many difficulties that surround his subject and at once protrude themselves when any detailed story of those far-off times is attempted. But Mr Collie is writing, I fancy, for an uninstructed though interested and educated public, and for them it is just as well to present the results so far obtained as a consistent whole ; too many marks of interrogation only weary the reader, and they will soon present themselves to his notice if the subject is further perused.

After a preliminary chapter on the Palaeolithic times generally, a number of chapters are devoted to the coming of Aurignacian Man to Europe, and the conditions, climatic and otherwise, then obtaining under which Man had to live. Further chapters follow on the various types of Aurignacian skeleton that have been discovered and on the various tools, etc., that have survived in the 'homes' for the 20th century investigation to excavate and study. These could well have been elaborated. Finally several chapters are devoted to a description of Aurignacian life, customs, art and religion, as far as these can reasonably be deduced from the investigations. Not the least interesting and important sections of the book are those dealing with work undertaken in North Africa. Mr Collie will find that when the results of Mr Leakey's excavations in western Kenya are published he will be profoundly interested. One regrets the choice of photography, rather than pen and-ink drawings, for the illustration of tool types. Photographs really show very little as compared with careful line drawings. On p. 27—and in the index—the names Brünn and Brno occur ; of course the former is only the German form of the latter, but it might have been wiser to have stuck to the one or the other. A really nice little book, and much above the ordinary more or less popular works ; are we to expect further numbers dealing with the other cultures ? One hopes so. M. C. Burkitt.

THE HISTORICAL SAINT COLUMBA. By W. Douglas Simpson, m.a., d.litt., f.s.a., Scot. Second edition. Aberdeen : Milne and Hutchison. 1927. 7s. 6d.

It is not unfair to say that this book is an outcome and expression of two tendencies of modern times—the one general, the other localized in Scotland.

In the last generation there was a pleasing desire to whitewash the more obtrusive gargoyles in the Temple of History. We recall Tiberius, Elagabalus, Richard III, among those who profited by this gracious exercise. But now there is abroad a contrary spirit ; people love to ' black-wash ' the saints depicted within the same stately structure. It would be unjust to say—as other critics have said in effect—that Dr Simpson has treated

St. Columba with the self-conscious superiority that has inspired Mr Lytton Strachey's dissections of certain idols of the populace ; but he cannot wholly be absolved from a charge of iconoclasm.

The second tendency—that localized in Scotland—may be called ' The Pictish Heresy '. Ireland (*Scotia major*) makes large claims to have imparted to Scotland (*Scotia minor*) her heritage of culture, of language, and of religion. Such a claim vexes the patriotism of the latter country ; and accordingly, in modern times, the Picts have been discovered and ' boomed ' as rival claimants. Happily for their champions, next to nothing is known for certain about the Picts, so that dogmatic assertions can be made about them with but little fear of contradiction. They can be decked out with a high civilization; a Gaelic speech can be put into their mouths; St. Ninian of Whithorn can be invoked, to have them Christianized long before St. Columba shall intrude his unwelcome presence. No doubt there were other missionaries from Ireland who laboured with success among them ; is not the name of one commemorated whenever we speak of Loch Maree ? But then, these came from among the Picts of Dalriada, and so count for nothing in favour of the Irish claim.

A book of no small size appeared some time ago, setting forth theories of this kind. Dr Simpson thinks that professed Celtic scholarship has earned little credit by treating this book with a conspiracy of silence. On the contrary, we are not sure that Celtic scholarship has not earned merit by its large-hearted Christian charity !

Now the Picts have actually told us some few things about themselves, and these are totally irreconcilable with all such fantasies. For example, they have left us a number of inscriptions in the Ogham character. No attempt to interpret these inscriptions as any form of Celtic has produced anything but bosh. The combination of letters MAQQ appears upon one or two of them ; but where everything is linguistically so strange, we are not entitled to assume that this is any form of the Celtic word *mac*, 'son', so frequent on the Irish Oghams ; it may be a mere accidental coincidence. Whatever may have been the Pictish language, these inscriptions assure us that it was certainly not Celtic. Moreover, the form of the Ogham character used is late and decadent ; curved lines appear, clearly betraying the influence of penmanship ; and there are many new forms among the letters, which suggest artificial modifications introduced by some scholar grappling with the problem of reducing to writing for the first time a language full of unfamiliar sounds.

Again, much is made of certain strange symbols found upon monumental stones in the land of the Picts. In the book before us, these are pointed to, with confidence, as affording evidence that the Picts had a Christianity independent of the Scotic Christianity of Columba. The stones bearing these symbols are divided into three classes, which may be thus described :—

I, Rude blocks, with the symbols incised.

II, Similar blocks, with the symbols incised on one face, and with a cross and ornament of the kind usually called ' Celtic ' on the other face, in relief.

III, More shapely stones, with the symbols and cross associated together, both in relief, and both alike decorated with ' Celtic ' ornament.

To which may be added class IV, with the ornamented cross alone, and no symbols.

These monuments are assumed to be all Christian ; but is the assumption justified ? We think not. There is absolutely no analogy, in the whole vast field of Christian symbolism, to these strange Pictish figures. It is impossible to suggest any Christian meaning for them. Ordinary Christian symbolism, universal everywhere else, makes no appearance among them. They are found, not only on stones, but also on metal ornaments, which, to say the least, have not a Christian appearance. They are not the recondite property of initiates, but are familiar to the John Smiths of Pictland, who scratch them on pebbles or on the walls of caves, just as their modern representatives write their names or other trivialities. There are some remarkable analogies between these symbols and certain elements in bronze-age rock sculpturings. This is just what we should expect if, as is most probable, the Picts were the survivors of the bronze-age aborigines : the symbols have assumed a more artistic aspect under the influence of the art of the La Tène civilization. If we accept these symbols as being essentially Pagan, the four classes of stones fit into their places with the neatness of a Chinese puzzle. Class I are Pagan monuments pure and simple. Class II are similar Pagan monuments which have at some later time been Christianized. Class III are monuments of a syncretistic period, when the Picts were emerging from their Paganism, but were still trying to reconcile the new teaching and their ancestral beliefs ; they are in fact monumental equivalents of the well-worship and the grove-worship which the Church was obliged to tolerate at the beginning of its missionary activity. Class IV represents the complete conquest of the Cross, when the symbols had been entirely abandoned or proscribed, with the Paganism of which they were the expression.

Further, the art of the superadded crosses is totally different from that of the symbols and the native animal sculpture associated with them. It is the ordinary system of interlacing, key, and spiral pattern, which makes up the material of Celtic ornament. And this ornament, when found in Pictland, differs in one most notable way from the same ornament as found elsewhere. It is almost always excessively minute and delicate, and is complicated to the last possible degree. The style is utterly unsuitable for stone sculpture ; the labour of producing it must have been prodigious. This fact has not escaped the notice of Dr Simpson (p. 78), but he fails to observe its significance, which is surely obvious. The models which the sculptors followed in cultivating this art were not stone sculptures, but were metal-work and manuscripts, in which portable form the designs were carried into Pictland. The native sculptors, like their bronze-age ancestors, incised their symbols, and had attained to no small skill in drawing them. Their foreign teachers turned their talents in other directions, giving them shrines and manuscripts to copy in stone : and taught them sculpture in relief. The square panel beneath the symbols on the Rosemarkie stone (to mention but one example out of many) is quite obviously a copy of the cover of that essentially Irish product, an ornamental book-shrine of metal.

The claims made for *Candida Casa* go far beyond the available evidence. Thus, we read that wherever the ' Celtic ' wheel-cross is found we are there to see the influence radiating from that centre ; and why ? Because the wheel-cross is derived from the *chi-rho* monogram (a mere hypothesis, unproved, and, in fact, very far from probable) ; and this monogram is found on certain ancient stones at Whithorn. But it is also found on certain ancient stones in co. Kerry, and it would be just as reasonable to transfer the centre of influence thereto.

Much is made of a story told in the Lismore *Life of St. Columba*, that when the saint arrived at Iona certain bishops came to drive him away. From this it is inferred that he was not even the first Christian to establish himself there. But the tale goes on to say that God revealed to him that they were not real bishops. Manus O'Donnell, the later biographer of the saint, or whatever authority he copied, has probably hit the nail on the head, notwithstanding the animadversions of Skene ; these ' bishops ' were pagan druids. Analogy with other monasteries of Irish foundation would lead us to expect to find evidence of a previous Pagan sanctuary on the site, which the Church has thus re-consecrated. The story of the immolation of Oran is obviously a Pagan tradition, which has somehow become incorporated with the Christian folk-lore of the place.

In the enumeration of the remains on Iona (p. 55) mention should have been made of the problematical foundations under the Cathedral pavement: and the circular building in front of the west door should not have been called the stump of a round tower—whatever it was it certainly was not that, as its wall is far too thin. Tigernach has been dethroned by Prof. MacNeill from his position as ' an authority of high importance ' (p. 59). St. Ciaran's Seat was not at Clonmacnois, but on the plain of Magh Ai (introduction p. xxxi). The word *Cathach* (p. 81) is not pronounced ' Caah ' (which is itself scarcely pronounceable); this mistake is not Dr Simpson's, but it would have been better not to repeat it.

For two reasons it is a weak argument that, because cormorants are common at Lindisfarne, therefore the Book of Lindisfarne, which is decorated with birds supposed to be cormorants, must have been written there. The art of which this book is one of the supreme expressions, is wholly subjective, not objective, and is independent of external impressions to an extent scarcely paralleled elsewhere; and cormorants are common everywhere in British seas, and no doubt were much commoner before the Evil One invented guns and Cockney sportsmen.

Among the well-selected illustrations, fig. 60 (which, incidentally, is upside-down) represents a slab at Iona described as a connecting-link between Irish and Anglian work. It is, however, definitely anchored to Ireland by an inscription, which does not appear in the illustration; it is much injured, but can be read as the memorial, in the Irish language, of a man with the Irish name Gilla-Choluim. This name, which means ' servant of Colum ', is actually the only written record of the patron saint now remaining on the island.

To sum up a review which could easily be made much longer, so many are the points of interests raised by this book. Dr Simpson's work provokes thought; demands serious consideration; makes valuable contributions to the history of a very obscure period; but hardly carries complete conviction. R. A. S. MACALISTER.

BUTLLETI DE L'ASSOCIACIO CATALANA D'ANTROPOLOGIA, ETNOLOGIA I PREHISTORIA. Vol. IV. 1926. Barcelona.

The publications of the Catalan Association contain a great deal of most valuable material, and English-speaking readers who are familiar with French and Latin need not be deterred from reading them on account of the Catalan language in which they are published. The present volume contains an article on ' The Iberian alphabet and Inscriptions ' by Julio Cejador; one on ' the Anthropology of Teneriffe ' by Eugenio Fischer; one in French on ' The Origin of the European Pheasant '; and another in German on ' Races of the Late Stone Age in the Iberian Peninsula, part I: the Iberian Peninsula '. The review section is always very full.

SYRIA. Geuthner, 13 rue Jacob, Paris. Vol. VIII. 1927.

The principal article in this number is an account of the second season at Mishrifé by Count du Mesnil du Buisson. It is followed by one on ' Kasr El Heir ' by Albert Gabrielle. The reviews are as usual good and interesting. SYRIA is published under the auspices of the High Commissioner in Syria, and contains accounts of the work which is being done by the French in their mandated territory. It is the official organ for reporting these results and, although separate parts are not sold, the annual subscription (120 francs) is such as to bring it within reach of all. It is published four times a year, each part containing about 80 pages and numerous fine illustrations.

ARCHIV FÜR ORIENT-FORSCHUNG, edited by ERNST F. WEIDNER (published direct by the Editor, Babelsberger-strasse 48, Berlin-Wilmersdorf, Germany).

Students interested in the archaeology of the Middle East are of course familiar with this periodical, but we wish to draw the attention of all readers of ANTIQUITY to it. (For the benefit of those whose knowledge of foreign languages is limited we may say that several of the articles are in English). The current number contains an article by Dr Weidner, the Editor, on 'A Statuette of Pur-Sin of Isin', and others, in English, by Drs Albright and Cannon, together with reviews and short notes, and a bibliography of recent publications, classified according to countries. Dr Weidner's journal deserves the support of archaeologists who value scholarly work and a wide outlook, and we gladly take this opportunity of recommending it to our readers.

BULLETIN DE LA SOCIÉTÉ PRÉHISTORIQUE FRANÇAISE. March 1928 (vol. xxv, no. 3).

This number contains an extremely valuable descriptive catalogue of megaliths in the department of Haute Marne by Monsieur G. Drioux. If only similar inventories could be compiled for the rest of France their distribution could be mapped and no doubt explained, but until this is done—and it will be a big job—conclusions based upon distribution must necessarily be tentative. There is a short article with a plan of a Roman theatre near Rouen, by Monsieur Coutil, and an interesting note on what were formerly called ' flint saws ' and are now known as ' elements of sickles ' by Dr Baudouin. It is to be regretted, however, that our French colleagues pay so little attention to the work done in other countries. The fact that these flints were used as sickles was discovered long ago in Egypt by Professor Petrie.

SOME MEGALITHIC WORK IN THE JAINTIA HILLS. By J. H. HUTTON. Journal of the Asiatic Society of Bengal, vol. XXII (N.S.), 1926, pp. 333–46.

These interesting observations should be read by those who want to learn about the habits of living peoples who still erect megalithic monuments. A very important point for British archaeologists is that of the megalithic bridges which closely resemble the so-called Cyclopean bridges on Dartmoor, and will doubtless be quoted by some as evidence of cultural connexions between the two areas.

THE BORZOI COUNTY HISTORIES. Edited by A. J. MADGE. SOMERSET, by Phyllis Ward. CHESHIRE, by R. Welldon Finn. Knopf. 1928. 3s. 6d. each.

These volumes are apparently intended to fulfil the same purpose from a historical standpoint as the Cambridge County Geographies do from the geographical. They fall short, however, of what might reasonably be expected at the present day. Many old hackneyed statements that we hoped never to see again are repeated. A map of Roman Somerset shows at least two non-existent Roman roads, and serves up again the imaginary names Via Julia and Via ad Axium, and the non-existent Axium on the site of Uphill.

One wonders why the *Victoria County History*, which is particularly important for Somerset, has not been used with better effect. Somerset, for instance, in the 17th century seems to have been completely overshadowed by two marches and battles, and to call the sketch map illustrating this ‘ Somerset in the 17th century ’ is simply not true.

A HISTORY OF THE ANCIENT WORLD. By M. Rostovtzeff. Volume ii, Rome. Translated from the Russian by J. D. Duff. 1927. pp. xiv, 388, 96 plates, 2 maps. Clarendon Press. 21s.

The second volume of M. Rostovtzeff's *History of the Ancient World*, which covers the history of Rome down to the time of Constantine, may cause a certain superficial disappointment to those who enjoyed his earlier volume on the Orient and Greece. The chapters on the prehistoric and early historic period in Italy, sketchy though they are, may contain material unfamiliar to the general reader, but the bulk of the book is concerned with a period so well-known, and with persons and events so familiar that any attempt to review them from a new angle is peculiarly difficult. This masterly sketch is written mainly from the point of view of social and economic history, and the consequent shifting of the angle of vision causes a striking change in the aspect of Roman culture. The traditional labels on the various periods of Roman history, the noble austerity of the Republic, the glories of the Augustan era, the peaceful prosperity of the age of the Antonines, the apparently sudden anarchy of the third century, vanish with the altered perspective. The picture which emerges from M. Rostovtzeff's very fair and unprejudiced pages is one of a slow but relentless destruction of the best by the worst elements in Roman life. The virtues of the Roman patrician and of the Roman small freeholder have doubtless been exaggerated, but that they possessed qualities of great social and economic value can hardly be denied, and the destruction of these classes and the transference of their political functions to unscrupulous financiers, profiteers and bureaucrats and an army mainly composed of half civilized provincials, mark a conspicuous decay of civilization.

The fact is that the comfort and luxury of urban life under the Roman Empire, and the extent of that empire and its highly organized bureaucracy, are frequently assumed to betoken an unusually high pitch of civilization, although they are actually amongst the most serious symptoms of decay. The intellectual life of Rome tells the same tale. M. Rostovtzeff is, I think, inclined to be too indulgent to her in this respect, for, when all is said, Roman art and Roman thought are but pale reflections of the art and thought of Greece, whilst science can hardly be said to have survived into the later period. The fine integrity, the penetrating yet delicate intelligence, the refined taste and exquisite sense of values which were the glory of Greek civilization, are vainly sought for in the civilization of Rome, because that civilization was simply a decadent branch of Hellenistic culture from which the informing spirit of Hellenism had fled. This essential flaw comes out all the more forcibly in the volume under review because the author is obviously not setting out especially to illustrate it.

As in the previous volume, the translation is easy and lucid and at times remarkably graceful, although the pleasure of reading it is lessened by the extraordinarily abundant punctuation. Commas are plentifully sprinkled everywhere and the proportion of colons and semicolons must be almost unprecedented. The value of the book is greatly increased by the excellent illustrations, which touch on every phase of life both in Rome and the provinces. They are accompanied by useful notes which render them independent of the text, but a few errors have been passed over, such as the confusion of the coins in plate LXXIX and the mention in connexion with plate LXXIII of an 'appended drawing' which appears to have been omitted. E. G. WITHYCOMBE.

KÊMI, REVUE DE PHILOLOGIE ET D'ARCHÉOLOGIE ÉGYPTIENNES ET COPTES, I. 1. 1928. To appear quarterly. France 80 fr., foreign countries 100 fr.

In *Kêmi* Egyptology has acquired yet another periodical, the first part of which has just appeared under the efficient editorship of Professor Montet, the excavator of Byblos. It is to be devoted solely to Egyptological subjects and studies, including Coptic, but excluding Greek literary papyri as well as Mohammedan Egypt. The program, it will be seen, is rigorously narrow, and it will be difficult in practice to adhere to it strictly. Even this first number contains an article by the editor upon the curious imprecatory texts relating to foreign nations inscribed upon potsherds and recently published by Professor Sethe. Professor Montet questions Professor Sethe's Twelfth Dynasty date for them and would prefer to assign them to the Thirteenth Dynasty ; he also suggests some fresh identifications of the Semitic names and corrects some of those proposed by Sethe. He is clearly right in identifying the local name in which Sethe saw the Phoenician city of Usu with the Ullasa of the Tel el-Amarna tablets ; Mr Gadd, it may be added, has recently shown that Ullasa is the Ulisu of an inscription of Naram-Sin found at Ur. The other articles in *Kêmi* are of a strictly philological character. One of them is a review and somewhat disparaging criticism of the new Berlin Dictionary of Ancient Egyptian of which the first part has recently appeared. A. H. SAYCE.

LA LINGUA ETRUSCA. By A. TROMBETTI. Florence, 1928.

Professor Trombetti's elaborate work, the result of twenty years of labour, was intended to be presented to the International Congress at Florence and consequently had to be put into shape within a limited space of time. Hence we have in it conclusions rather than the reasons upon which the conclusions are based. As the conclusions mean the interpretation of the individual words and grammatical forms of the elusive Etruscan language it will be seen that we have in most cases to accept the Professor's *ipse dixit* for their correctness. At the same time the materials for forming a conclusion are usually given in full ; the misfortune is that in the case of Etruscan the materials are so scanty.

One thing at any rate is certain and that is that the book will be indispensable in all future attempts at the decipherment of the language. The materials are brought up to date, the reading of the text having been made as complete and accurate as possible, and the whole book is a model of orderly arrangement and lucid statement. How far the Professor has succeeded in unravelling the mysteries of the Etruscan lexicon is another matter ; some of the new contributions which he has brought to it will undoubtedly stand the test of time, but there is much that, to me at least, is unconvincing.

He has, he tells us, adopted a double method, 'combinatory' and etymological. The 'combinatory' is the method of comparison which, where we have no bilingual texts to assist us, is the safest and at all events the most scientific. By the etymological is meant comparison with words of similar sound in other languages. Did we know any other language allied to Etruscan this would be a legitimate and trustworthy method to pursue, but unfortunately Etruscan stands isolated and alone like Basque or Japanese and the more we know about it the more isolated it appears to be. The discovery of the names of the numerals, for instance, though even now we cannot allocate their respective values with certainty, has been sufficient to prove this. It is true that there are certain words which are related to corresponding words in Latin, but most of these were borrowed by Latin from Etruscan, while others are Etruscan loan-words from the Italian languages. There is little use in comparing Bantu or Copt or Chinese as long as the signification of an Etruscan word is a matter of doubt.

If it were quite certain that the Etruscans came from Asia Minor a comparison of Etruscan with the Asianic languages might be permissible, though the scientific study of the latter is still in a backward state. But serious doubts have been cast of late upon their traditional origin and Pareti's arguments against it are supported by the late date to which recent archaeology would ascribe the arrival of the Etruscans in Italy. Moreover the discovery and partial decipherment of the Lydian inscriptions have shown that there was little, if any, connexion between the languages of Etruria and Lydia, and that, therefore, the tradition which made the Etruscan people of Lydian origin cannot have been correct. Moreover the earlier Etruscan cities are inland rather than on the coast, as would naturally have been the case if the invaders had arrived by sea instead of land. On the other hand, the Lemnos inscription, which is in an older form of Etruscan, seems to me to show that in the 8th or 9th century B.C. there was maritime connexion between the western coast of Asia and the coast of Etruria, while the tradition which brought the ' Tyrseni ' from Asia Minor was at once too early and too positive not to be based on fact. My own view is that we have to distinguish between two periods in the history of Etruscan colonization in Italy, an earlier one which we may call Tyrsenian and which goes back to about 1200 B.C. and a later one which brought their kinsfolk from Asia Minor about four and a half centuries later. It is noticeable that the Etruscans appear to have had no difficulty in establishing themselves on the coast as soon as they wished to do so : there was no one who sought to oppose them.

One great difficulty about Etruscan decipherment is that although we have a multitude of inscriptions they consist for the most part of proper names. The only long text is that on the wrappings of a mummy in the Museum at Agram and since this is necessarily of a ritualistic and theological character it is just the sort of text which is the most difficult to interpret. The only other texts of any length are those of Capua, which also seems to be theological, of Novilara which Professor Trombetti is, I think, right in regarding as a forgery, and of Perugia on which light has been thrown by the discovery that the word *naper* that plays such a prominent part in it is explained by Festus who tells us that it was a measure of length (Lat. *funiculi*). We may perhaps further add the inscription on the leaden plate of Magliano.

It is astonishing that in spite of this paucity of materials so much should nevertheless have been accomplished in the way of decipherment, and that the signification of so many words should have been fixed with certainty. The fact that most of these are words in common use like *klan* ' son ', *sech* ' daughter ', *avil* ' year ', helps to emphasize the isolation of Etruscan and bears the same testimony as the numerals. Along with the determination of these common words has naturally gone the determination of certain pronouns and several of the grammatical forms, to which Professor Trombetti has now added a further number.

He pays a just tribute to Torp, to whom was due the larger part of the progress in decipherment made of late years. He accepts, in fact, most of Torp's identifications, making them a starting-point for his own. How far he himself has extended them is for the future to decide. His sections on the phonology, morphology and grammar of the language certainly show a considerable advance upon his predecessors. They are followed by what is the main subject of his volume, the explanation and decipherment of the texts of the Agram mummy, and this again by an analysis of the longer and shorter inscriptions. At the end comes a good index.

To his list of words I would add *Chosfer*, which in the *Liber Glossarum* is given as the Etruscan name of the month of October. I am inclined to compare it with the numeral *cezp–* which, we know, must represent one of the numerals between 6 and 10. A comparison with the two other numerals *semph–* and *nurph–* (which belong to the same series) indicates a connexion with *ki*, the name of one of the first six numerals, as found upon dice. A. H. Sayce.

BABYLONIAN AND ASSYRIAN SCULPTURE IN THE BRITISH MUSEUM.

By H. R. Hall. Paris and Brussels : G. van Oest. 1928. 63s.

This is indeed an *édition de luxe*, a truly sumptuous work, with large type, fine paper and first-class photographs. The introduction and description of the plates are by Dr Hall, as well as the selection of the plates themselves, and their excellence may therefore be taken for granted. We begin with some crude examples of Sumerian art, if art it may be called, and end with the somewhat emasculated Assyrian art of Assur-bani-pal. As Dr Hall points out, in the case of Assyrian art we must go to the earlier art of Assur-nazir-pal if we want 'distinction and character', even though it is also characterized by a callous hardness, both moral and aesthetic. But at no time do we find in the sculptural art of Mesopotamia that humanity and appeal to the affections which is so attractive in the art of Egypt.

Dr Hall draws attention to one great point of difference between the sculptures of Assyria and Egypt. To the Assyrian 'Semitic mankind must have looked very much alike', just as a flock of sheep looks to ourselves. Portraiture, so highly developed at an early date in Egypt, did not exist ; on the other hand, there was a meticulous observation of details in the matter of dress and the like. The Assyrian was pre-eminently practical and it was to the details of practical life that he devoted his observation. This accounts also for the absence of what Dr Hall calls the thaumaturgic element in Assyrian as compared with Egyptian sculpture. It must be remembered that the Assyrian king was a military leader, not a son of the Sun-god as in Egypt, or even a high-priest or commercial trader as in Babylonia, and the Assyrian kingdom itself was an armed camp.

The sculptural art of Semitic Babylonia differed again from that either of Sumer or of Assyria. The specimens of it which have survived from the age of Sargon of Akkad may be immature, but they strike a true note and have none of the effeminacy which is the chief fault of the later Semitic art of Babylonia. How far they may have influenced the neo-Sumerian art of Gudea it is at present difficult to say ; in the latter we have what seem to me the highest achievements of Assyro-Babylonian sculpture. The statues found at Tello combine truthfulness to nature with an air of solid virility.

But with a few exceptions the sculptural art of both Babylonia and Assyria, when compared with that of Egypt, more especially of the Old Empire and to a less extent of the Middle Empire, does not appear to me to rise much above what I should term a semi-barbarous level. The Babylonians were traders and agriculturists, the Assyrians were a horde of ruthless but well-disciplined soldiers, and so far as sculpture is concerned neither of them possessed the artistic instinct. The discoveries at Ur, however, have shown that in early Sumerian days there really was an element in the population which could produce and appreciate works of true art, and further excavation may therefore prove that Babylonian civilization was after all not so lacking in the artistic sense as it once seemed to be.

A French edition of Dr Hall's work is appearing in *Ars Asiatica* ; it only remains to say that the volume is a delight to peruse and cannot be neglected by anyone who is interested in the ancient culture of Mesopotamia. The photographs are themselves masterpieces of artistic and accurate reproduction. A. H. SAYCE.

NOTE ON THE ZAAMENKOMST SLAB. By DR SIDNEY H. HAUGHTON. Transactions of the Royal Society of South Africa, vol. XIV, part 3.

This brief note is accompanied by two fine plates, one of them in colours, showing a slab decorated with remarkable polychrome paintings. It was found in a cave close to Zaamenkomst Farm, at about twelve miles from Maclear (Griqualand East). It lay in two pieces, the painted side down, at a spot having no signs of occupation. Nothing for that matter is said of the contents of the ashes found in other parts of the cave. There were no paintings on any other slabs ; on the walls, however, were some of a wholly different technique. That of the slab, now in the South African Museum, is polychrome, and very remarkable. The scene depicts a herd of seventeen elands, among whom are running a dozen hunters armed with bow and arrow and also, according to the author, with ' battle-axes '—which last however I do not see in the fine reproductions attached to the work. As for the feather head-dresses, which, with the ' battle-axes ', cause the author to believe the human figures to be Bantus, they resolve themselves into three marks behind the head of a single hunter which might represent arrows. For that matter, Dr Hamy reported previously that certain Bushmen wore their reserve arrows around their forehead held in place by a band, which arrangement might give the impression of feather head-dresses.[1] Two of the human figures wear long narrow white breech-clouts, which recall a phallic sheath.

The elands are drawn four times with numerous lines around their mouths, which might represent foam, sometimes blood-flecked, from wounded animals.

The slab may have fallen from the ceiling and be a fragment of a vanished decoration, or it may have been painted separately like those found covering graves in some caves on the coast, published by Peringuey. The frescoes should be considered, in my opinion, analogous to the most perfect groups copied by Miss Helen Tongue in the neighbouring region of Basutoland (see her two chromocollotypes and photographic plates 1, 2, 4, and plates 2, 3, 11, 16, 18, 22, 24 [in part], 25, 27, 36, 44 ; one finds again on plate 22 the drawing of foam on the mouth). These frescoes, often underlying frescoes less fine, and sometimes overlying others which are very archaic (see von Luschan[2]), depict only hunting scenes and *never* any human types other than Bushmen or Strandloopers. I see no reason to attribute them to so late a period as that of the Bantu migrations, but the presence of a phallic sheath cannot but recall the Lybians of whom other remarkable drawings from Rhodesia have recently been published.

One must thank the author for the excellent illustrations. HENRI BREUIL.

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[1] See, for example, Cartailhac et Breuil, *La caverne d'Altamira*, fig. 140, p. 184, and Verneau, *Le race humaine*, fig 270, p. 344.

[2] Felix von Luschan, *Über Buschmann-Malereien in den Drakensbergen. Zeitschrift für Ethnologie*, 1908, p. 669, taf. x-xiii, especially taf. xi. 1.

THE ARCHAEOLOGY OF THE VAAL RIVER GRAVELS. By A. J. H. GOODWIN. Transactions Royal Society of South Africa, vol. XVI, part I.

The author first devotes several pages to what is known of the gravels and terraces of the Vaal from the works of Penning, du Toit, Wagner, Johnson, and Haughton. This shows that there are probably three or four of these terraces. The oldest of these is at an altitude of 500 feet above the present rivers and is older than their system, but contains neither fossils nor palaeoliths. There is another at 200 feet, then one at 70 feet. This last has yielded as fossils *Mastodon*, *Equus cf. Zebra*, *Damaliscus*, *Hippopotamus amphibius* (var. *Robustus*) and *Yridina.* From this Haughton came to the conclusion that this terrace could be placed in the oldest Pleistocene ; it contains, at all events, no traces of any human industry. Such traces are found in the gravels from 40 feet downwards, and as the pieces are often rolled the author rightly concludes that they are in part older than these terraces. The author very wisely draws our attention to the fortuitous association, on the plateau, of objects of different ages, and also to the errors which may be caused by the lateral ravining of the terraces by temporary torrential waters, and the refilling of the channels with derived and rolled elements which may thus be mistaken for older objects incorporated in the terrace. Man's appearance in South Africa thus took place in the course of the Quaternary period, when the Vaal had already taken its present course ; one finds the industry attributed to the Bushmen only in the lowest levels.

Next the author devotes twenty pages, which hardly lend themselves to an analysis, to a detailed study of the material from a dozen sites. The two-faced implements figured belong to the following types : heart-shaped, sub-discoidal, lance and leaf-shaped, and to a type which the author calls *biseau* but which we call *hachereau.* The whole, according to the author, belongs to the Stellenbosch industry. It involves the removal of lateral flakes from which by secondary working the two-faced pieces are made. On the contrary, in the Fauresmith industry, the two-faced pieces are obtained from longitudinal flakes and there are no more *biseaux* but many small retouched flakes. Mr Goodwin has a theory of his own about the *biseaux*—that they are not tools, but rather refuse of fabrication of *coups de poing* which had been spoiled in the making. It is possible that he is right in regard to certain pieces (fig. 4 for example) but it seems to me that his theory cannot be made to apply to plate XII (2), plate IX (1), plate VII (1 and 2), identical, as they appear to be, with the Saharan and Cantabrian series with which I am well acquainted. Among these last there is hardly any association between *coups de poing* and *biseaux*, of which a complete series exists from the Levallois flake without retouch to the perfect piece, and to that which had its transversal edge (dulled by use) resharpened by secondary retouch. One can also establish, for the Saharan specimens, analogous series which unquestionably show them to be true implements. I cannot therefore generally admit the hypothesis of Mr Goodwin, which is only applicable to certain cases. The examination just made by me at Cambridge of a series of South African pieces brought back by Mr Miles Burkitt, sustains me in this conclusion

The illustrations which accompany the text, whether drawings (by Mrs Goodwin) or photographs, are most excellent. HENRI BREUIL.

DIE FRÜHKRETISCHEN SIEGEL: eine Untersuchung über das Werden des Minoischen Stiles. By FRIEDRICH MATZ. Berlin: Walter der Gruyter. 1928. pp. xvi, 278 and 26 plates.

The majority of the figural motives on early Cretan seals are derived from Hither

Asia, nearly all the rest from Egypt. Indeed the seals were the channel through which the Oriental motives were transmitted to the later monumental art of the Aegean. None the less in Minoan glyptic the conceptual representations of the Ancient East were infused with a new life and realism. But the contrast between Minoan art and Egyptian or Mesopotamian goes deeper. The ' syntax of the composition ' discloses a different psychological attitude towards the surface to be decorated. In ornamenting a round surface the Egyptian liked to single out panels or to dispose his patterns along an axis or cords. In Hither Asia the tendency was to emphasize the circularity of the round surface and therefore to arrange the designs centrally, peripherally or radially and, in the case of a more complicated object, such as a vase, to accentuate the simple geometrical aspects of the figure with ribbons. In Crete on the other hand the aim of the artist was to give unity to the whole surface, linking up its several parts by the use of motives that repeat themselves endlessly, such as groups of double S-spirals arranged at right angles that cover the whole surface and lead the eye indifferently all over it, or by torsion effects that attract the glance from the centre to the circumference or from the base to the rim. (The ' torsion-motive ' is defined as ' lines which, running obliquely to the vertical axis of the object encircle it so as to express all its dimensions in a single stroke ' which, being interpreted, means lines gyrating round the body of the vase like the thread of a screw).

These propositions, applied first to seals and then to all vehicles of artistic decoration, are expounded with a wealth of illustration, a refined and keen appreciation of aesthetic effects and a really overwhelming erudition in the first part of Dr. Matz's brilliant and masterly study devoted to Minoan, Egyptian and Mesopotamian ornament. In the later chapters the author sets out to show that the native Cretan art, as disclosed by this comparative analysis, really combines two elements—a native Mediterranean (never precisely defined) and an intrusive ' Danubian '.

The surface-unifying principles are essentially Danubian, though they are exemplified even in the art of the first neolithic period in Thessaly (Sesklo), which is thereby contrasted with the Susa-Anau series to which Hubert Schmidt would attach it. The spirals and torsion-motives of Dimini, the Cyclades, Crete and even Anatolia betray so specifically Danubian a mentality that they imply an ethnic element common to the Danube basin, the Aegean and western Anatolia ; this can only be represented by invaders from beyond the Balkans. Though Matz here as ever treats his material with critical acumen, he admittedly lacks first hand knowledge of the museum material and even his logic is not irreproachable.

Let us for the moment admit the rightness of his method and the correctness of its application to the material here analyzed. Does it in the least force us to infer a current *from* Central Europe to explain the facts of Minoan art ? The author includes the Sesklo art in his surface-unifying group though it does not employ the spiral system. He derives the Danubian spirals from the continuous chevron band encircling the whole vessel (a purely skeuomorphic pattern, remember, derived from the grass sling in which the gourd was carried). This pattern and the torsion-motive both occur in predynastic Egypt as well as in Danubian Europe. Hence the allegedly Danubian principles of decoration and the ancestor of specifically Danubian patterns are traceable round the east Mediterranean world at a period or in regions in which influences from the north are unthinkable. Why then should they not be ascribed to that ' primitive Mediterranean ' art that Matz never fully defines ? Why should not Danubian culture still be regarded as a very early offshoot of east Mediterranean as I have argued in the first number of ANTIQUITY (I, 79) ? (The extraordinary parallelism in ceramic forms and decoration observable in the two extremities of the region—the Upper Danube and the Upper Nile—would then denote survivals in cultural backwaters of the archaic substratum from which in the intermediate zones more elaborate forms had grown up). Need the striking Danubian parallels to Minoan and Cycladic design imply more than convergent evolution in two regions where an ancient community of race had been reinforced by commercial intercourse ?

Such an interpretation would avoid that forcing of the evidence into which our author sometimes falls in dealing with the Danubian and Balkan material. It is for instance perverse to elevate into a separate group the rare European stamps or *pintaderas* which significantly diminish in numbers the further one goes north and west from the Hellespont, and to ignore the numerous and exact parallels thereto from Elam. Be that as it may, *Die frühkretischen Siegel* offers not only an invaluable store-house of material, but a most suggestive and illuminating co-ordination of the whole.

V. GORDON CHILDE.

THE CITIES AND CEMETERIES OF ETRURIA. By GEORGE DENNIS. With introduction by Prof. W. M. Lindsay. Everyman Series, Dent N.D. (Introduction dated January 1907). 2 vols. 4s.

' A reissue of this well known work in so handy a form would be most acceptable were it not for the fact that it is reprinted from the first edition of 1848, and not from the thoroughly revised second edition, which appeared thirty years later, and is no doubt still protected by the Copyright Act.[1] It thus does not embody the results of Dennis' latest researches, and omits the description, *e.g.*, of several tombs at Corneto which were discovered in the intervening thirty years, and one or two chapters which were added to the second edition. Of this fact, however, no hint so far as I have been able to discover, is given, either by Professor W. M. Lindsay in the editor's preface which he contributes (at the end of which both the editions are cited), or elsewhere in the course of the work. Such a proceeding is hardly fair either to the author himself or to the public, who may (as happened to the present writer) meet with unpleasant surprises when they attempt to use it as a guide on the spot. Professor Lindsay's remark that " since it was written a good deal has been added to our knowledge of the subject " is true in a sense which he can hardly have intended '. (T.A. in *Classical Review*, xxii, 1908, p. 133).

I wrote this twenty years ago, and, as it still stands, am inclined to reprint it without alteration—only adding that foreign scholars are unfortunately misled into citing this reprint as a fourth edition. (See the selected bibliography in G. Buonamici's and A. Neppi Modona's useful *Guide to Etruscan Antiquities*, Florence, 1928). Ducati in his *Etruria Antica* wisely cites only the editions of 1848 and 1878. T. ASHBY.

EXCAVATION OF GRAVES AT ACKERGILL, ETC. By ARTHUR J. H. EDWARDS, F.S.A.Scot. Proceedings of the Society of Antiquaries of Scotland, LXI, 1927, pp. 196–209.

This is a record of the valuable work being carried on by Mr Edwards, Assistant Keeper of the National Museum of Scotland. We do not propose to review it but merely to call the attention of our readers to the steadily growing accumulation of data from the work of our Scottish colleagues. Each volume of these Proceedings bears fresh witness to the excellence of that work.

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[1] The third edition of 1883 is, so far as I am aware, a reissue of that of 1878.